Appendix A: Course Schedule

for the study programme Digital Logistics (work-integrated) B.Eng.

Please note: The German version of this document is the legally binding version. The English translation provided here is for information purposes only.

First sem	nester	L	ST	Ε	P/S	SSS	СР	
Module	Module title	Module						
number		ID						
3312	Introduction to the Professional Field	EBF	1	0	1	2	1	5
3104	Basics of Programming	GDP	2	0	1	1	1	5
6121	Fundamentals of Economic Sciences	GWW	2	0	2	0	1	5
3218	Mathematics I	MATH1	2	0	2	0	1	5
3334	Technical Basics	TGL	2	0	1	1	1	5
						Tota	I CP:	25
Second s	semester		L	ST	Е	P/S	SSS	СР
Module number	Module title	Module ID						
3333	Procurement, Production and Logistics	BPL	2	0	2	0	1	5
3019	Databases	DUD	2	0	1	1	1.5	5
3213	Material Flow Technology	ILG	2	0	1	1	1	5
3219	Operations Research	MOR	1	0	3	0	1.5	5
3223	Accounting, Investment, Finance and Taxes	RIF	2	0	2	0	1	5
	1	l.	I			Tota	I CP:	25
Third ser	mester	L	ST	E	P/S	SSS	CP	
Module number	Module title	Module ID						
3210	Business Process Modelling and IT Systems	GPM	2	0	1	1	1	5
3211	Innovation and Project Management	IPM	2	0	2	0	1	5
3112	Practical Module I	PX1	0	0	0	0	0	5
3224	Statistics	STAT	2	0	2	0	1	5
3121	Technical English	TCE	2	0	0	2	1	5
3227	Packaging Technology and Load Securing	WVT	2	0	2	0	1	5
	1	l.	I.			Tota	I CP:	30
Fourth se	emester		L	ST	Е	P/S	SSS	СР
Module number	Module title	Module ID						
3205	Digital Service Engineering and Services Marketing	DSE	2	0	2	0	1	5
3215	Lean Production	LPM	2	0	2	0	1	5
3217	Logistics IT Systems	LES	2	0	1	1	1	5
3201	Quality Management	QMG	2	0	2	0	1	5
3207	Web Technologies	WEB	2	0	1	1	1	5

Fifth sem	nester	L	ST	E	P/S	SSS	СР	
Module number	Module title	Module ID						
3216	Business Intelligence	BUI	2	0	1	1	1	5
3204	Data Analytics	DML	2	0	1	1	1	5
3122	Practical Module II	PX2	0	0	0	0	0	5
9024	Elective Module: Digital Logistics	WM				0		5
9024	Elective Module: Digital Logistics	WM				0		5
		•				Tota	I CP:	25
Sixth ser	nester		L	ST	Е	P/S	SSS	СР
Module number	Module title	Module ID						
3203	Cyberphysical Logistics Systems	CPL	2	0	1	1	1	5
3220	Microcontroller Programming	MCP	2	0	1	1	1.5	5
3129	Practical Module III	PX3	0	0	0	0	0	5
9024	Elective Module: Digital Logistics	WM				0		5
9024	Elective Module: Digital Logistics	WM				0		5
						Tota	I CP:	25
Seventh	semester		L	ST	Ε	P/S	SSS	CP
Module number	Module title	Module ID						
3133	Bachelor Thesis	BA	0	0	0	0	0	12
3134	Colloquium	KOL	0	0	0	0	0	3
3011	Personnel and Organisation	PUO	2	0	2	0	1	5
3225	Transport, Forwarding, Customs and Foreign Trade Law	TZR	2	0	2	0	1	5
						Tota	I CP:	25

Abbreviations of the teaching forms: L = lecture, ST = tuition in seminars, E = exercise, S = seminar, P = practical, SSS = supervised self-study (all data in semester credit hours);

CP = credit points W/S = winter/summer semester

Elective Modules Digital Logistics									
Module number	Module title	Module ID	W/ S	L	ST	Е	P/S	SSS	СР
3228	Digital Factory Planning and Simulation	WSS	S	2	0	1	1	1	5
3337	Identification Systems	IDS	W	2	0	1	1	1	5
3240	Industrial Engineering	IEN	W	2	0	2	0	1	5
3212	Intercultural Communication	IKP	S	1	0	3	0	1.5	5
3024	Production Planning and Control	PPS	S	2	0	2	0	1	5
3208	Supply Chain Management	SCM	W	2	0	2	0	1	5
3226	Transport Logistics	TLG	S	2	0	2	0	1	5
3335	Distribution and Sorting Systems	VSO	W	2	0	1	1	1	5

Appendix B: Module catalogue

for the study programme Digital Logistics (work-integrated) B.Eng.

Bachelor Thesis	1697
Procurement, Production and Logistics	1698
Business Intelligence	1700
Cyberphysical Logistics Systems	1702
Data Analytics	1704
Databases	1706
Digital Service Engineering and Services Marketing	1708
Digital Factory Planning and Simulation	1710
Introduction to the Professional Field	1712
Business Process Modelling and IT Systems	1714
Basics of Programming	1716
Fundamentals of Economic Sciences	1718
Identification Systems	1720
Industrial Engineering	1722
Innovation and Project Management	1724
Intercultural Communication	1726
Colloquium	1727
Lean Production	1728
Logistics IT Systems	1730
Material Flow Technology	1732
Mathematics I	1734
Microcontroller Programming	1736
Operations Research	1738
Personnel and Organisation	1740
Practical Module I	1742
Practical Module II	1743
Practical Module III	1744
Production Planning and Control	1745
Quality Management	1747

Accounting, Investment, Finance and Taxes	1749
Statistics1	1751
Supply-Chain Management	1753
Technical Basics1	1755
Technical English1	1757
Transport, Forwarding, Customs and Foreign Trade Law 1	1759
Transport Logistics	1761
Packaging Technology and Load Securing 1	1763
Distribution and Sorting Systems	1765
Elective Module: Digital Logistics	1767
Web Technologies 1	1768

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Bac	helor Th	nesis							ВА	
	Identification Workload: number:		Credits:	Study semester: Frequency of the offer		y of the	Duration:			
313	3	360 h	12 7th se		sem.		Annual (Summer)		1 semester	
1	Course:		Planned group	sizes	Scop	e	Actual of time / classrooteachin	om	Self-stu	udy
	Lecture		60 students		0	SCH	0	h	360	h
		n seminars	30 students		0	SCH	0	h	0	h
	Exercise	<u> </u>	20 students		0	SCH	0	h	0	h
	Practica seminar		15 students		0	SCH	0	h	0	h
2	study	sed self-	60 students competences:		0	SCH	0	h	0	h
3	After successfully completing the bachelor thesis, students are able to independently work on and appropriately present a practice-oriented task from their special subject area, both in the subject-specific details and in the interdisciplinary contexts, using scientific methods within a specified period of time.									
	The bachelor thesis is an independent scientific work from the subject area of the respective study programme with a description and explanation of its solution. It can be derived from current research projects at the university or from operational problems with an engineering character. It can also be determined by an empirical investigation or by conceptual or design tasks or by an evaluation of existing sources. The different forms can be combined.									
4		f teaching:								
			n with faculty	tutor t	ing					
5		ation require	ments:							
	Formal:		dinated tania	from	the et	tudon+	e chasial	cubicat	aros	
6	Content Forms o	f assessmen	dinated topic t:	110111	me si	uuent	s special	subject	area	
7	Prerequi	isite for the a	award of credit	points						
8	Digital B.Eng., Engine	Logistics (v Mechatro	odule (in the fo vork-integrate nics/Automati k-integrated)	d) B.E ion (ng., work-	Digital integr	Technoloated) B	.Eng., I	Product-	
9		-	ade for the fina	al grad	e:					
10	Module	ng to BRPO coordinator:								
	N. N.									
11	Other in	formation:								
12	Languag									
	German									

Pro	Procurement, Production and Logistics										BPL	
	Identification Workload: number:			Credits:	Stud	y sem	ester:	Frequence offer	y of the	Duratio	n:	
3333 150 h		150 h		5	2nd sem.		Annual (Summer)		1 semester			
1	1 Course:		PI	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60) students		2	SCH	0	h	56	h	
	Tuition i	n seminars	30) students		0	SCH	0	h	0	h	
	Exercise	!	20) students		2	SCH	16	h	62	h	
	Practical or seminar		15	students	_	0	SCH	0	h	0	h	
	Supervis study	sed self-	60	60 students		1	SCH	16	h	0	h	

2 Learning outcomes/competences:

Students can explain the functions "procurement", "production" and "logistics" in a differentiated way, understand their interrelationships as well as the weaknesses of these functions. With the help of the selected contents and methods, they can recognise and properly assess real economic tasks and problem areas in particular and independently develop approaches to solutions. Students will be able to carry out a sound supplier evaluation and selection and, based on production planning, investigate suitable sourcing concepts and decide which scientific method is appropriate for sourcing and demand calculation. They can systematically analyse procurement markets to increase their transparency and recognise developments relevant to procurement.

Students learn about basic production systems and can evaluate their applicability for specific industries. They can independently calculate bottleneck-oriented production programmes and transfer the results to operational production planning and control.

In the field of logistics, students understand practice-relevant objects from intralogistics, transport logistics and supply chain management. They can also analyse complex logistical systems.

3 Contents:

- Procurement market research (objects and processes)
- Procurement planning (principles, routes, dates and quantities),
- Procurement execution (supplier selection, request for proposal, testing, selection and ordering),
- Procurement controlling (cost and process control)
- Demand assessment (programme-oriented, consumption-oriented and heuristic demand assessment)
- Inventory planning (inventory types, strategies, management and monitoring)
- Planning of logistics and production processes
- Systematisation of production factors
- Planning and management of production
- Logistics planning
- Logistics systems (intralogistics, transport logistics and storage systems)
- Distribution logistics

4	Forms of teaching:									
	Learning mat	terials for self-study, classroom events in the form of exercises								
5	Participation requirements:									
	Formal:									
	Content:									
6	Forms of asses	ssment:								
	Term paper of	or written examination								
7	Prerequisite fo	r the award of credit points:								
	Module exam	nination pass								
8	Application of the module (in the following study programmes)									
	Digital Logist	ics (work-integrated) B.Eng. and Industrial Engineering and								
		(work-integrated) B.Eng.								
9	Importance of	the grade for the final grade:								
	according to	BRPO								
10	Module coordii	nator:								
	Prof. Dr. rer.	oec. Pascal Reusch								
11	Other informa	tion:								
12	Language:									
	German									

Bus	iness Ir	ntelligence	:						BUI		
Identification Wornumber:		Workload:	Credits:	Stud	dy semester: Frequency offer			cy of the	Duratio	Duration:	
321	6	150 h	5	5 5th s			Annual (Winter)	1 sem	ester	
1	Course:		Planned group	Planned group sizes			Actual contact time / classroom teaching		Self-stu	dy	
	Lecture		60 students		2	SCH	0	h	64	h	
		n seminars	30 students		0	SCH	0	h	0	h	
	Exercise		20 students		1	SCH	8	h	46	h	
	Practica seminar		15 students		1	SCH	16	h	0	h	
	Supervis		60 students competences:		1	SCH	16	h	0	h	
2	Studen		competences:								
	operational processes as well as the essential requirements and action strategies associated with the management of business processes. have the holistic view of the problem that is necessary in this context and are able to understand the many interactions in the different areas of business administration in a way that is appropriate to the problem.										
3	Contents:										
	 Basics of logistics controlling (strategic, tactical, operational) Derivation of key performance indicators for the quality of operational processes Indicator systems in practice Recording and reporting of logistics services, revenues and calculation of logistics costs Data sources in the company (e.g. ERP) and evaluation tools (e.g. business warehouse) Extract, Transform, Load (ETL) processes Reporting and dashboard applications Data discovery and business intelligence (e.g. with SAP BO) Project-related logistics controlling Integrating approaches for the design of logistics controlling: Supply Chain Operations Reference Model, Balanced Scorecard 										
4		f teaching:	£ -4 -				41 6	6		_1	
	Learnin practica	•	self-study, cla	SSF00	m eve	ents in	the forn	n or exer	cises an	u	
5		ation require	ments:								
	Formal:	-									
	Content										
6		f assessmen							_		
7	Prerequi	isite for the a	en examination award of credit	points				aminatioi	1		
			on pass and co								
8	Digital		odule (in the fol ork-integrated	_				nologies	(work-		
9	Importa	nce of the gi	rade for the fina	al grad	e:						
	accordi	according to BRPO									

10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	-
12	Language:
	German

Cyk	erphysi	cal Logisti	cs Systems						CPL	
Identification Workload: number:		Credits:				Frequen offer	cy of the	Durat	Duration:	
320		150 h	5	6th	sem.		Annual (Summer)		1 semester	
1	Course:		Planned group	sizes	Scop)e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	0	h	56	h
		n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		1	SCH	8	h	54	h
	Practica seminar		15 students		1	SCH	16	h	0	h
	Supervis		60 students		1	SCH	16	h	0	h
2	Learning outcomes/competences: Students: • know the interrelationships of complex technical systems for the provision of logistics services. • can combine the detailed knowledge of hardware and software									
3	components acquired in previously completed modules and design complex overall systems for the flow of information and materials. Contents:									
	 Functions and performance classes of cyber-physical systems (CPS) or intelligent objects System architectures from embedded hardware and software to communication with web server Application-specific requirements and corresponding technical solutions and assignment of requirements to individual system components Potential and characterisation of a cyber-physical logistics system based on a case study Cooperation of backend systems such as PPS, ERP or disposition systems with production-logistic resources, e.g. CPS workpiece carriers, CPS machines, sensors, RFID readers, mobile devices and human interaction in cyber-physical environments Networking and communication of the systems involved Self-control of IoT devices in the logistics process (decision-making and execution) Networking across process and operational boundaries Design of technology roadmaps and pre-development strategy 									
4	Learnin	•	self-study, cla	ıssroo	m ev	ents in	the forr	n of exer	cises a	nd
5	practica Participa Formal:	als ation require	ments:							
	Content	. -								
6	1	: - f assessmen	†·							
υ			ı. en examinatior	n nro	iect v	vork or	oral ev	aminatio	1	
7							or ar cx	arrin latio	•	
	Prerequisite for the award of credit points: Module examination pass and course assessment									

8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	-
12	Language:
	German

Dat	a Analy	tics								DML	
Iden num	tification ber:	Workload:		Credits:	Stud	y sem	ester:	Frequency of the offer		Duratio	n:
		150 h		5	5th sem.		Annual (Winter)		1 semester		
1	1 Course:		PI	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60) students		2	SCH	0	h	56	h
	Tuition in seminars Exercise		30	30 students 20 students		0	SCH	0	h	0	h
			20			1	SCH	8	h	54	h
	Practical or seminar		15	15 students		1	SCH	16	h	0	h
0	Supervised self- study		60	60 students		1	SCH	16	h	0	h

2 Learning outcomes/competences:

Students:

- know and master the basic concepts and methods of data analysis and statistical learning.
- are able to access internal and external data sources.
- can understand the procedures for classification, modelling and prediction on the basis of large data sets and apply them to examples.
- master the basic handling of NoSQL databases
- can describe numerical data by statistical parameters and visualise them in a common way.
- are able to analyse large amounts of data in a targeted as well as exploratory manner, whereby a diverse range of methods from the field of statistics and machine learning is available to them.
- are able to explain the basic procedure for analysing very large data sets on Hadoop clusters.

3 Contents:

- Introduction and general overview ("Small Data" vs. "Big Data")
- NoSQL database systems
- Tapping data sources
- Basics of programming with Python (which is used in the exercises for practical data analysis)
- Basics of descriptive statistics
- Data visualisation
- Correlation analysis and regression
- Time series analysis
- · Basics of machine learning
- Pre-processing of data (e.g. dimension reduction)
- Unsupervised learning (e.g. clustering)
- Supervised learning I: Classification (e.g. via support vector machines)
- Supervised learning II: learning any input-output correlations (e.g. with artificial neural networks)
- Entry into large-scale data analysis with Hadoop

4 Forms of teaching:

Learning units for self-study, classroom events in the form of exercises and practicals

5	Participation re	equirements:								
	Formal:	-								
	Content: -									
6	Forms of assessment:									
		written examination, project work or oral examination								
7	Prerequisite for	r the award of credit points:								
		nination pass and course assessment								
8	Application of	the module (in the following study programmes)								
	Digital Logist	ics (work-integrated) B.Eng. and Product-Service Engineering								
	(work-integra									
9	•	the grade for the final grade:								
	according to	BRPO								
10	Module coordii	nator:								
	N. N.									
11	Other informa	tion:								
	-									
12	Language:									
	German									

Dat	abases								DUD	1	
Iden num	tification ber:	Workload:	Credits:	Study semester:		ester:	Frequency of the offer		Durat	Duration:	
301		150 h	5	2nd	2nd sem.			Annual (Summer)		nester	
1	Course:		Planned group	Planned group sizes			Actual time / classro teachi	om	Self-st	udy	
	Lecture		60 students		2	SCH	0	h	68	h	
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	!	20 students		1	SCH	8	h	34	h	
	Practical seminar		15 students		1	SCH	16	h	0	h	
	Supervis study		60 students		1.5	SCH	24	h	0	h	
2	Learning Studen		competences:								
	 database systems and know the principles of the organisation of a database system acquire knowledge about modern (object-oriented) and classical data modelling including the meaning of normalisation rules are able to carry out a complete relational database design, starting from a requirements specification are proficient in standard SQL to perform simple and complex queries, as well as change operations. gain the ability to evaluate and select database technologies can plan and carry out database projects and plan and implement a modern database application 						al data				
ω	 Contents: Introduction to database concepts and database technologies (data modelling, normalisation theory, database language SQL) Basics of database systems (database design, database definitions, database queries) Data Manipulation Language (DML, German "Datenverarbeitungssprache"), Data Definition Language (DDL, German "Datenbeschreibungssprache"), Data Control Language (DCL, German "Datenaufsichtsprache") Efficiency of SQL queries, index structures 										
4		f teaching:	on concepts								
4	Learnin	g units for	self-study, cla	issrooi	m eve	ents in	the form	n of exer	cises a	nd	
5	practica	ation require	ments:								
5	Formal:	-	monto.								
	Content: -										
			+.								
6	Forms o	f assessmen aper, writte	en examinatio					project	work, c	oral	
7	Forms o Term p examin	f assessmen aper, writte ation or ex		ompar	nying			project	work, c	oral	

8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng., Digital Technologies (work-integrated
	B.Eng., Product-Service Engineering (work-integrated) B.Eng. and Industrial
	Engineering (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Dr. rer. nat. Sabrina Proß
11	Other information:
	-
12	Language:
	German

Dig	ital Serv	vice Engine	eering and S	Servic	es Ma	arketi	ng		DSE		
	ntification nber:	Workload:	Credits:	Stud	dy semester:		Frequency of the offer		Durati	Duration:	
320	5	150 h	5	4th	sem.		Annual (Summer)		1 sem	nester	
1	Course:		Planned grou	Scope		Actual contact time / classroom teaching		Self-stu	Self-study		
	Lecture		60 students		2	SCH	0	h	56	h	
		n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	<u> </u>	20 students		2	SCH	16	h	62	h	
	Practica seminar	•	15 students		0	SCH	0	h	0	h	
	study	sed self-	60 students competences:	60 students		SCH	16	h	0	h	
	Students will be able to apply the theoretical principles of Resource Based View (RBV), Service Dominant Logic (SDL) as well as Service Engineering and New Service Development in a practice-oriented manner. Students are able to use the most important instruments of branding/sales in a socially and ethically responsible manner and to identify and highlight special										
3	features in the marketing of services, e.g. logistics marketing. Contents:										
	 Process models in service engineering Relationship between service engineering and quality Customer orientation in service engineering Identification of innovative value-added services (VAS) with creativity techniques Acquisition of development partners with the help of the "lead user" approach (von Hippel) Description of value-added services with the help of the "service blueprinting" approach Introduction to the theoretical basis for the development of VAS in logistics and supply chain management (RBV and SDL) Market research and information Marketing strategy (product and programme policy, contracting policy, distribution policy, communication policy, marketing mix including social, intercultural and ethical aspects) 										
4	Forms o	Aspects of a f teaching:	social respons	sibility							
4		_	self-study, cl	assroo	m ses	ssions	in the fo	m of ex	ercises		
5	Particina	ation require	ments:								
J	Formal:	-									
	Content	: -									
6			t:								
6		f assessmen aper, writte	t: en examinatio	n, pro	ject v	vork or	oral exa	ıminatioı	า		

7	Prerequisite for the award of credit points:							
	Module examination pass							
8	Application of the module (in the following study programmes)							
	Digital Logistics (work-integrated) B.Eng.							
9	Importance of the grade for the final grade:							
	according to BRPO							
10	Module coordinator:							
	N. N.							
11	Other information:							
	-							
12	Language:							
	German							

Dig	ital Fact	ory Plann	ing	and Simu	ılatio	n				wss	
	tification ber:	Workload:		Credits: Study semester			ester:	Freque	ncy of the	Duration:	
322	number: 3228 150 h			5	6th sem.			Annual (Summer)		1 semester	
1	Course:		PI	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60	60 students		2	SCH	0	h	56	h
	Tuition i	n seminars	30	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		1	SCH	8	h	54	h	
	Practical or seminar		15	15 students		1	SCH	16	h	0	h
	study	ervised self- 60 students			1	SCH	16	h	0	h	
2	Learning outcomes/competences:										
	Studen		240	o in the mo	dallin	a and	Leimul	ation of	nroductic	n and la	aistics
		gain knowie	_	e in the mo		-	Simul	ation of	productio	ni and id	gistics

- systems and can describe them.
- gain practical experience in carrying out and evaluating simulations.
- are enabled to abstract the learned contents and to use them to solve company-specific problems by learning and practising the general methodical procedure for the preparation of simulation studies.
- can analyse, design and optimise technical information and material flow systems in production with the help of simulation studies.
- have in-depth knowledge of optimising warehouse and transport handling
- can derive and verify optimisation measures using IT-supported material flow simulation.

Contents:

- Methods of factory and work planning and the use and influence of stochastics in simulation
- Method-based procedure of a simulation based on the procedure model from VDI Guideline 3633 Sheet 1
- Testing and estimation methods, methods of data collection and preparation, modelling, verification and validation, and evaluation of
- Integration of simulation into the overall planning process (digital factory)
- Planning and calculation of simulation studies as well as their organisational embedding in planning projects
- Typical mistakes as well as basic rules and guiding principles when using simulation

Development, evaluation and optimisation of simulation models for the mapping of logistical processes within production, using event-oriented standard simulation software

• Exercises on the practical application of a simulation tool

Forms of teaching:

Learning units for self-study, classroom events in the form of exercises and practicals

Participation requirements:

	Formal:	-							
	Content:	-							
6	Forms of assessment:								
	Term paper, written examination, project work or oral examination								
7	Prerequisite for the award of credit points:								
	Module exam	nination pass and course assessment							
8	Application of	the module (in the following study programmes)							
	ics (work-integrated) B.Eng.								
9	Importance of	the grade for the final grade:							
	according to	BRPO							
10	Module coordi	nator:							
	Prof. Dr. rer. oec. Pascal Reusch								
11	Other information:								
	-								
12	Language:								
	German								

Introducti	on to the P	rofessional	Field					EBF		
Identification number:	Workload:	Credits:	Study	Study semester:		Frequency of the offer		Dura	Duration:	
3312	150 h	5		1st sem.			Annual (Winter)		mester	
1 Course		Planned group sizes		Scop	oe .	Actual time / classro teachi	oom	Self-s	Self-study	
Lecture	:	60 students		1	SCH	0	h	35	h	
Tuition	in seminars	30 students		0	SCH	0	h	0	h	
Exercis	е	20 students		1	SCH	8	h	46	h	
Practica semina		15 students		2	SCH	32	h	13	h	
study	ised self-	60 students competences:		1	SCH	16	h	0	h	
They a They h compa function In add require	Students have insights into the historical development and training structures of logistics. They are familiar with the job description of logisticians. They have an understanding of the economic framework conditions of German companies at home and abroad and gain knowledge of important corporate functions. In addition, students gain insights into the professional and personal requirements for logisticians and can then compare these with their own competences.									
1. Job 2. Bas 3. Eco 4. Imp 5. Ind 6. Stra 7. Pers 8. Suc Excurs and ur	Contents: 1. Job description 2. Basic introduction to economic thinking 3. Economic framework conditions for companies 4. Important corporate functions for logisticians 5. Industries for logisticians 6. Strategic management analysis of industries and markets 7. Personal development prospects for logisticians 8. Success factors in study and practice Excursions to selected companies in the region with the focus on getting to know and understand company processes and to get to know the fields of activity of									
logistic 4 Forms	of teaching:									
	-	for self-stud	y, class	sroor	n even	ts in the	e form of	exercis	ses	
5 Particip Formal Conten		9								
6 Forms	of assessmen	t:	n n '	loct :	uorla ==	oral	omineti-			
7 Prerequ	uisite for the a	en examination award of credit			vork or	orai ex	aminatio	r 1		
Module examination pass										
	Application of the module (in the following study programmes) Digital Logistics (work-integrated) B.Eng.									
8 Applica			_	-	y progra	ammes)				
8 Applica Digital	Logistics (w		ed) B.E	ng.	y progra	ammes)				

10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	Supplementary literature will be announced at the beginning of the course.
12	Language:
	German

Bus	iness P	rocess Mo	delling and I	T Sys	tems	6			GPM		
Ider num	itification iber:	Workload:	Credits:	Stud	Study semester:			Frequency of the offer		Duration:	
321	0	150 h	5	3rd	3rd sem.			Annual (Winter)		nester	
1	Course:		Planned group	sizes	Scop	Эе	Actual time / classro teachir		Self-stu	udy	
	Lecture		60 students		2	SCH	0	h	64	h	
		n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	!	20 students		1	SCH	8	h	46	h	
	Practica seminar		15 students		1	SCH	16	h	0	h	
2	study	sed self-	60 students competences:		1	SCH	16	h	0	h	
3	 standard business software (ERP software). design and model processes in the company with the help of modern software architectures (e.g. SOA and BPMS). analyse processes and requirements of companies for the use, operation and maintenance of integrated software systems (adaptation options interfaces to other IT systems, etc.) Contents: Process modelling and data modelling using modelling tools (e.g. ARIS) Evaluation of concepts of integrated data processing Drafting reference models for designing the data, process and function models (e.g. Aachen PPS model) Analysis of ERP systems (architecture, structuring, database models, HANA) Overview of the core modules and applications of ERP systems in the process: e.g. order to cash process) Application-oriented use cases are used to demonstrate how business processes can be implemented consistently and across software modules. 										
4	Learnin practica	als	self-study, cla	assroo	m eve	ents in	the forr	n of exer	cises ar	nd	
5	Formal:	ation require - 	пенть:								
6		f assessmen	t:								
J			n examinatio	n, pro	iect v	vork or	oral exa	aminatio	n		
7	Prerequi	isite for the a	award of credit on pass and co	points							
8	Applicat Digital	ion of the mo Logistics (w	odule (in the fo vork-integrate rial Engineerir	llowing d) B.E	study ng.,	y progr Digital	ammes) Technol				

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Jörg Nottmeyer
11	Other information:
	-
12	Language:
	German

	sics of P	rogrammiı	ng						GDP	
	ntification nber:	Workload:	Credits:	Stud	y sem	ester:	Frequen	cy of the	Durat	ion:
310		150 h	5	1st s	sem.		Annual (Winter	-)	1 ser	nester
1	Course:		Planned group) sizes	Scop	oe	Actual time / classro teachi	_	Self-st	udy
	Lecture		60 students		2	SCH	0	h	64	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	?	20 students		1	SCH	8	h	46	h
	Practica seminar		15 students		1	SCH	16	h	0	h
2	study	sed self-	60 students competences:		1	SCH	16	h	0	h
	•	master and gain basic apply it. gain the abto convertare enabled language. gain basic algorithms.	use the term knowledge of bility to structuate them into solud to solve sin knowledge in sic competence o simple processing the sic competence of the sic	the four sire sire ition in the	mple nodul proble applic	informes. ms incomes cation	of accountion te dependentiand impossion of the contraction of the contraction of accounting the	nting syschnology ntly in a plementa	probled progration of and stre	ms and amming simple uctured
	•	of compute Basic repre Use of deve Introductio General str	ture of compu	ata in ronme nming Jramm	com ents I lang	puter s	-			
	•	Functions for Control structions Vectors and Recursion /	or input and o uctures	utput odular				s, Q-Sort	, Bubbe	el-Sort
4	Forms o	Functions for Control structions Vectors and Recursion / Algorithms etc.	or input and o uctures d pointers Iteration, mo and data stru	utput odular ctures	s: Sor	ting al	gorithm			
	Forms of Learning practical	Functions for Control structions Vectors and Recursion / Algorithms etc. If teaching: Ing units for als	or input and o uctures d pointers Iteration, mo and data stru self-study, cla	utput odular ctures	s: Sor	ting al	gorithm			
	Forms of Learning practical Participal	Functions for Control structions Vectors and Recursion / Algorithms etc. f teaching: g units for	or input and o uctures d pointers Iteration, mo and data stru self-study, cla	utput odular ctures	s: Sor	ting al	gorithm			
	Forms of Learning practical Participals	Functions for Control structions Vectors and Recursion / Algorithms etc. If teaching: Ing units for als ation require	or input and o uctures d pointers Iteration, mo and data stru self-study, cla	utput odular ctures	s: Sor	ting al	gorithm			
4 5	Forms of Learning practical Participal Formal:	Functions for Control structions Vectors and Recursion / Algorithms etc. If teaching: Ing units for als ation require	or input and ouctures dipointers Iteration, moand data stru self-study, cla	utput odular ctures	s: Sor	ting al	gorithm			

7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng. and Industrial Engineering and
	Management (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	-
12	Language:
	German

	dament	als of Eco	nomic Scienc	es					GWW	
Iden num	itification	Workload:	Credits:	Stud	y sem	ester:	Frequenc offer	y of the	Duratio	n:
612		150 h	5	1st s	sem.		Annual (Winter)		1 semester	
1	Course:		Planned group	sizes	Scop	e	Actual of time / classroot teaching	om	Self-stu	dy
	Lecture		60 students		2	SCH	0	h	56	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	<u> </u>	20 students		2	SCH	16	h	62	h
	Practica seminar		15 students		0	SCH	0	h	0	h
2	study	sed self-	60 students competences:		1	SCH	16	h	0	h
	individu in busir Studen Investr "Busine Logistic Financi	ual sub-area ness terms. ts have th ment, Fina ess Process cs", "Digital ng", "Cost	ay, they under as of business he basic under ncing and Ta Modelling ar Service Engin and Investmandles", "Business	admi erstandaxes", nd IT eering nent	nistra ding "Hu Syst g and Accou	tion. 1 to att ıman ems", Servic	end the Resource "Procure ees Marke ", "Plan	module modules and ement, ting", "	e able to es "Acco Organis Productio Accounti	think unting, sation", on and ng and
		ting and Sa	, 24	3 Law	, Le	an Pic	auction			olling",
3	Forms o	s: Corporate forms Importance Companies Corporate of Legal forms Marketing befores	functions undamentals of e of the enterp as the subject goals s of companies pasics	of the rise ir t of bu	mark n the usines binati	et and social ss adm ons of	l competi market e ninistratio compani	conomy n es		
4	Forms o	s: Corporate for Economic for Importance Companies Corporate Corporate Companies Legal forms Marketing for teaching: In g materials	functions undamentals of e of the enterp as the subject goals of companies basics for self-study	of the rise ir t of bu	mark n the usines binati	et and social ss adm ons of	l competi market e ninistratio compani	conomy n es		
	Forms o Learnin Participa Formal:	s: Corporate f Economic fi Importance Companies Corporate g Legal forms Marketing b f teaching: ag materials	functions undamentals of e of the enterp as the subject goals of companies basics for self-study	of the rise ir t of bu	mark n the usines binati	et and social ss adm ons of	l competi market e ninistratio compani	conomy n es		
4	Forms of Learning Participation Formal: Content Forms of the second seco	s: Corporate f Economic f Importance Companies Corporate g Legal forms Marketing b f teaching: ation require : f assessmen	functions undamentals of e of the enterp as the subject goals s of companies basics for self-study ments:	of the rise ir t of bu s/com	mark n the usines binati	et and social ss adm fons of	competi market e ninistratio compani	es e form o	of exercis	
4 5	Forms of Learning Participals: Content Forms of Term power prerequires to the content of the con	s: Corporate f Economic f Importance Companies Corporate g Legal forms Marketing b f teaching: g materials ation require : f assessmen aper, writte	functions undamentals of e of the enterp as the subject goals s of companies basics for self-study ments: t: en examination award of credit	of the rise ir t of bu s/com r, clas	mark n the usines binati sroon	et and social ss adm fons of	competi market e ninistratio compani	es e form o	of exercis	
4 5	Forms of Learning Participate Formal: Content Forms of Term pour Prereque Module	s: Corporate f Economic f Importance Companies Corporate g Legal forms Marketing b f teaching: ag materials ation require : f assessmen aper, writte isite for the a	functions undamentals of e of the enterp as the subject goals s of companies basics for self-study ments: t: en examination award of credit	of the rise ir t of bu s/com r, clas	mark n the usines binati sroon	et and social ss adm ons of n sessi	competimarket eninistration compani	es e form o	of exercis	

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Economist Ulrike Franke
11	Other information:
12	Language:
	German

Ide	entificati	on System	ns						IDS	
	ntification nber:	Workload:	Credits:	Stud	y sem	ester:	Frequenc	y of the	Duratio	on:
333		150 h	5	5th s			Annual (Winter)	1	1 sem	ester
1	Course:		Planned group	sizes Scope		e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	0	h	56	h
		n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		1	SCH	8	h	54	h
Practica seminar			15 students		1	SCH	16	h	0	h
	Supervis study		60 students		1	SCH	16	h	0	h
2	Studen	ts: design tech and effectiv	competences: inical concepts ve operation o	f logis	tics s	ystems	S.			
	•	for optimal plan and ar	requirements use in logistic nalyse the use f standards, re	s. cases	in lo	gistics	in a prof	essional	manne	
3	Content	S:								
	optical	data entry	of data input, of (barcode, mag c integration a	gnetic	, RFiC	0).				J
		AN code,				delling of IT conventions for data exchang .), mathematical codification of barcod				
	the ide	ntification of code printer	ible applicatio of transport, g ers, conceptua	oods	and lo	oad car	rriers (e.	g. parar	neterisa	tion of
	Trackin	a and tra	acing of data	a in	logis	tics sy	ystems			g and
	standar		tracking inforr ırity)			g the l	ogistics o	hain, tra	aceability	y, data
4	standar protect	disation of	•			g the l	ogistics o	hain, tra	aceability	y, data
4	standar protect Forms o	disation of ion, IT secution of teaching: g units for	•	matior	n alon					
	standar protect Forms o Learnin practica	disation of ion, IT secution of teaching: g units for	self-study, cla	matior	n alon					
	Forms o Learnin practica Participa Formal:	disation of ion, IT secution, IT secution, IT secution if teaching: g units for als ation require	self-study, cla	matior	n alon					
	Forms o Learnin practica Participa Formal: Content	disation of ion, IT secution, IT secution, IT secution is gunits for als	self-study, cla	matior	n alon					
	Forms of Learning practical Participal Formal: Content Forms of the process of th	disation of ion, IT secution, IT secution, IT secution is gunits for als ation require is assessmen	self-study, cla ments: t:	natior	m eve	ents in	the form	of exer	cises an	
5	Forms of Learning practical Participal Formal: Content Forms of Term p	f teaching: g units for als ation require f assessmen aper, writte	self-study, claments: t: en examination	natior essroo	m eve	ents in	the form	of exer	cises an	
5	Forms o Learnin practica Participa Formal: Content Forms o Term p Prerequi	f teaching: g units for als ation require f assessmen aper, writte	self-study, claments: t: en examinationaward of credit	natior essroo	m eve	ents in	the form	of exer	cises an	
5	Forms of Learning Participal Formal: Content Forms of Term posterior Participal Forms of Term posterior Module	f teaching: g units for als ation require f assessmen aper, writte site for the a examination	self-study, claments: t: en examinationaward of credit	nssroo n, pro	m eve	ents in	the form	of exer	cises an	

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Jörg Nottmeyer
11	Other information:
12	Language:
	German

Ind	ustrial I	Engineerir	ıg						IEN		
	itification	Workload:	Credits:	Stud	y sem	ester:	Frequenc offer	y of the	Dura	Duration:	
324		150 h	5 5th		sem.		Annual (Winter)		1 semester		
1	Course:		Planned group	sizes	Scop	e	Actual of time / classroot teaching	om	Self-st	tudy	
	Lecture		60 students		2	SCH	0	h	56	h	
		n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	<u> </u>	20 students		2	SCH	16	h	62	h	
	Practica seminar		15 students		0	SCH	0	h	0	h	
		sed self-	60 students		1	SCH	16	h	0	h	
	They c organis both ir	an describ ation (stru nstitutional	al engineering e the charact cture, process y and functi	teristic , wor	k orga	anisatio	on) in a	different	iated r	nanne	
	The stu organis of chara Further of oper network Studen orienter	udents are sation of a pacteristic demore, the rational graded comparts learn the structure	on planning and able to description compounts and students know oup work for nies. The essential of companies in the compani	be, cl pany surve the k both metho	ntrol, assify qualit eys. pasics conv	mainted and a atively for the vention	nalyse the and quate introduced and and general and general sections.	nd indus ne curre ntitative ction an globally/ g classio	trial logent ope ely on the d optination of internations	rationa ne bas misatio ational	
3	The stu organis of chars of chars of open network Studen oriented	sectoristic description of a pacteristic description of a pacteristic description of the compact of the compact of the compact of teaching: Judents are pacted of the compact of the comp	able to descri roduction com- comments and students know- coup work for- nies. ne essential of d companies in nning and opt es and standa preparation gement ion lanning nning y development he value streat rocess planning	be, clapany surve the key both method field the firm frought to provide the firm froug	assify qualiteys. converse converse con	mainter and a atively for the vention or trans value sideral aduct potention of	e introdu al and on al and on asforming added s ce provis	nd indusine current cu	etrial logent operation optimized op	ration ne bas misatio ational unction	
1	The stuorganis of chara Further of open network Studen oriented	ation of a pacteristic demore, the rational graded comparts learn the structure struct	able to descri roduction compouments and students known oup work for nies. The essential of companies in anning and optes and standa preparation gement ion lanning nning of development he value streat rocess planning of stor self-study	be, clapany surve the key both method field the firm frought to provide the firm froug	assify qualiteys. converse converse con	mainter and a atively for the vention or trans value sideral aduct potention of	e introdu al and on al and on asforming added s ce provis	nd indusine current cu	etrial logent operation optimized op	ration ne bas misatic ational unction	
	The stuorganis of chara Further of open network Studen oriented	sectoristic description of a pacteristic description of a pacteristic description of the compact of the compact of the compact of teaching: Judents are pacted of the compact of the comp	able to descri roduction compouments and students known oup work for nies. The essential of companies in anning and optes and standa preparation gement ion lanning nning of development he value streat rocess planning of stor self-study	be, clapany surve the key both method field the firm frought to provide the firm froug	assify qualiteys. converse converse con	mainter and a atively for the vention or trans value sideral aduct potention of	e introdu al and on al and on asforming added s ce provis	nd indusine current cu	etrial logent operation optimized op	ration ne bas misatio ational unction	

6	Forms of assessment:
	Term paper or written examination
7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
12	Language:
	German

Inn	ovation	and Proje	ct	Manageme	ent						IPM	
Iden num	tification ber:	Workload:		Credits:	Stud	y sem	ester:	Frequ offer	ency o	of the	Duratio	n:
321	1	150 h		5	3rd/ th se	4th/5 em.	th/7	each	seme	ster	1 semester	
1	Course:		PI	anned group	sizes	Scop	e	time	ial con e / sroom hing	tact	Self-stud	dy
	Lecture		60) students		2	SCH	0	h	1	56	h
	Tuition i	n seminars	30	30 students		0	SCH	0	h	1	0	h
	Exercise	!	20) students		2	SCH	16	h	ı	62	h
	Practica seminar		15	students		0	SCH	0	h	1	0	h
	Supervis study	sed self-	60) students		1	SCH	16	h	١	0	h

2 Learning outcomes/competences:

Students:

- are prepared to lead product development and innovation projects and teams to success in terms of holistic and strategically oriented project management (also including agile methods).
- understand the basics of project management and can use the elementary technical vocabulary.
- can explain the most important instruments of project management.
- are able to lead/manage a project in a given process-organisational project organisation.
- are able to develop and specifically use control options for different project phases (controlling of the degree of completion, cost controlling).
- can explain the specifics of team building and project management.
- can carry out the moderation of team meetings projects.
- know instruments of IT-supported project management.
- can explain the importance of corporate goals and are able to distinguish between different leadership cultures.
- can name essential aspects of industrial property protection.

3 Contents:

- Basics of project management (terms/methods/instruments)
- Project phase models and planning systems (project preparation, project planning, project implementation, project completion)
- Agile project management
- Forms of project organisation
- Innovation and change management, self-management
- Project planning (project structure plan/cost plan/resource plan/time plan)
- Project documentation/project controlling
- Risk management
- Special features of use of methods in innovation projects

	 (Strategic preparation / initiation, planning, monitoring and control of innovation projects) Leading project and innovation teams (social structures, special communication situations in projects, real and virtual project work, problem analysis and concepts for action) Stakeholder management (factors influencing the successful management of projects) Methods of idea generation (creativity techniques etc.) Trainings and workshops on selected technical examples Basic aspects of industrial property protection
4	Forms of teaching:
	Learning units for self-study, classroom sessions in the form of exercises
5	Participation requirements:
	Formal: -
	Content: - Forms of assessment:
6	
	Term paper, written examination, project work or oral examination Prerequisite for the award of credit points:
7	Module examination pass
	Application of the module (in the following study programmes)
8	
	Digital Logistics (work-integrated) B.Eng., Digital Technologies (work-
	integrated) B.Eng., Mechatronics/Automation (work-integrated) B.Eng.,
	Product-Service Engineering (work-integrated) B.Eng. and Industrial
9	Engineering and Management (work-integrated) B.Eng. Importance of the grade for the final grade:
9	according to BRPO
10	Module coordinator:
10	Prof. DrIng. Michael Fahrig
11	Other information:
11	-
12	Language:
12	German

mte	ercultur	al Commu	nication						IKP	
Iden num	ntification ber:	Workload:	Credits:	Stud	y sem	nester: Frequency of offer		cy of the	ne Duration:	
321	2	150 h	5	6th sem.		Annual (Summer)		1 semester		
1	Course:		Planned group	o sizes Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		1	SCH	0	h	28	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		3	SCH	24	h	74	h
	Practical seminar		15 students		0	SCH	0	h	0	h
	Supervis study		60 students competences:		1.5	SCH	24	h	0	h
2	process	ses in the t in commu	ually and co world of wor nicative proce	k. Stu	ıdents	can	take int			
3	•	Multicultura Gender and Cultural dir Corporate d		pects				J	5	
4		f teaching: g units for	self-study, cla	assroo	m ses	sions	in the fo	rm of ex	ercises	
5	Formal:	ation require	ments:							
	Content: - Forms of assessment:									
6		f assessmen		n, pro	ject w	ork or	oral exa	aminatio	า	
7	Term p Prerequi	f assessmen aper, writte site for the a	en examinatio award of credit			ork or	oral exa	aminatio	า	
	Term p Prerequi Module Applicat	f assessmen aper, writte site for the a examination ion of the ma	en examination ward of crediton pass podule (in the fo	points llowing	study			aminatio	n	
7	Term p Prerequi Module Applicat Digital Importa accordi	f assessmen aper, writted is for the acceptance of the grant of the gr	en examination award of credit on pass odule (in the fowork-integrate rade for the final for the fin	points ollowing ed) B.E	study Ing.			aminatio	า	
7 8	Term p Prerequi Module Applicat Digital Importa accordi Module	f assessmen aper, writte isite for the a examinatio ion of the ma Logistics (wance of the grant	en examination ward of credite on pass odule (in the for york-integrate rade for the final	points ollowing ed) B.E	study Ing.			aminatio	n	
7 8 9	Term p Prerequi Module Applicat Digital Importa accordi Module Econom	f assessmen aper, writted site for the acceptance of the graph of the	en examination ward of credite on pass odule (in the for york-integrate rade for the final	points ollowing ed) B.E	study Ing.			aminatio	า	

Coll	oquium								KOL	
Iden num	tification ber:	Workload:	Credits:	Stud	y sem	ester:	Frequenc	y of the	Duratio	on:
313	4	90 h	3	7th	sem.		Annual (Summe	er)	1 sem	ester
1	Course:		Planned group	sizes	Scop	e	Actual of time / classrooteachin	om	Self-stu	dy
	Lecture		60 students		0	SCH	0	h	90	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		0	SCH	0	h	0	h
	Practical seminar		15 students		0	SCH	0	h	0	h
	Supervis study		60 students		0	SCH	0	h	0	h
2			competences: students den							
	connect indeper	tions and ndently. St	thesis, its s its extra-s udents can cr ir significance	subjec itically	t irei gues	ference stion tl	es orall	y and	justify	them
3	Contents	S:								
	The col	loquium co	mplements th	e bach	nelor	thesis	and is to	be asse	ssed	
	indeper	ndently.	•							
	Conten	t of the the	sis according	to the	topic	;				
			procedure in		repara	ation c	of the the	sis and	the issue	es that
			xt of the thesi	S.						
4		f teaching: amination								
_		attion require	monts:							
5	Formal:		modules of	tho s	tudy	progr	ammo i	must h	SUCCO	cefully
	Torridi.		pleted. The ba		_					•
	Content		tment of the	bachel	or the	esis				
6		f assessmen	it:							
		amination								
7 '	Prerequisite for the award of credit points:									
7										
8	Applicat	ion of the m	odule (in the fo	llowing	g study					
	Applicat Digital I	ion of the m Logistics (w	odule (in the fo ork-integrate	· Ilowing d) B.E	g study ng., [Digital	Technolo	•		
	Applicat Digital I B.Eng.,	ion of the m Logistics (w Mechatro	odule (in the fo ork-integrate nics /Automa	llowing d) B.E tion (g study ng., [work	Digital -integr	Technolo ated) B.	Eng., P		
	Applicat Digital I B.Eng., Enginee	ion of the m Logistics (w Mechatro ering (work	odule (in the fo vork-integrate nics /Automa -integrated) E	llowing d) B.E tion (g study ng., [work	Digital -integr	Technolo ated) B.	Eng., P		
8	Applicat Digital I B.Eng., Enginee (work-i	ion of the m Logistics (w Mechatro ering (work ntegrated)	odule (in the fo vork-integrate nics /Automa -integrated) E B.Eng.	llowing d) B.E tion (3.Eng.	study ng., [work- and l	Digital -integr	Technolo ated) B.	Eng., P		
	Applicat Digital I B.Eng., Enginee (work-i Importa	ion of the m Logistics (w Mechatro ering (work ntegrated) nce of the g	odule (in the fo york-integrate nics /Automa :-integrated) E B.Eng. rade for the fina	llowing d) B.E tion (3.Eng.	study ng., [work- and l	Digital -integr	Technolo ated) B.	Eng., P		
9	Applicat Digital I B.Eng., Engined (work-i Importa accordi	ion of the m Logistics (w Mechatro ering (work ntegrated)	odule (in the fo york-integrate nics /Automa :-integrated) E B.Eng. rade for the fina	llowing d) B.E tion (3.Eng.	study ng., [work- and l	Digital -integr	Technolo ated) B.	Eng., P		
8	Applicat Digital I B.Eng., Engined (work-i Importa accordi	ion of the m Logistics (w Mechatro ering (work ntegrated) nce of the g ng to BRPC	odule (in the fo york-integrate nics /Automa :-integrated) E B.Eng. rade for the fina	llowing d) B.E tion (3.Eng.	study ng., [work- and l	Digital -integr	Technolo ated) B.	Eng., P		
9	Applicat Digital I B.Eng., Enginee (work-i Importa accordi Module (ion of the m Logistics (w Mechatro ering (work ntegrated) nce of the g ng to BRPC	odule (in the fo york-integrate nics /Automa :-integrated) E B.Eng. rade for the fina	llowing d) B.E tion (3.Eng.	study ng., [work- and l	Digital -integr	Technolo ated) B.	Eng., P		
9	Applicat Digital I B.Eng., Enginee (work-i Importa accordi Module (ion of the m Logistics (w Mechatro ering (work ntegrated) nce of the g ng to BRPC coordinator:	odule (in the fo vork-integrate nics /Automa -integrated) E B.Eng. rade for the fina	llowing d) B.E tion (3.Eng.	study ng., [work- and l	Digital -integr	Technolo ated) B.	Eng., P		

Lea	n Produ	ction							LPM		
Identification number: 3215		Workload:	Credits:	Stud	ndy semester: h or 6th mester		Frequency of the offer Annual (Summer)		Durati	Duration:	
		150 h	5	4th sem					1 semester		
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2 SCH		0 h		56	h	
	Tuition in seminars		30 students		0	SCH	0	h	0	h	
	Exercise		20 students		2	SCH	16	h	62	h	
	Practical or seminar		15 students		0	SCH	0	h	0	h	
2	Supervised self- study Learning outcomes/o		60 students		1	SCH	16	h	0	h	
3	 Students: can independently apply selected lean methods from the areas of production, administration and development. can document production processes in a structured manner and identify potential for improvement in the process flow as well as derive measures for optimisation. can implement the methods of "leadership on the ground" and establish constructive cooperation in a team of production workers. Contents: Vision of a Lean Company Problem solving techniques and strategies Effects of lean management methods Value stream mapping / value stream design (theory and concrete examples) Production systems using the example of the Toyota Production System Muda (types of waste and their avoidance) Jidoka Principle (Quality in Process Andon, Poka Yoke) Just-in-time principle (Kanban, levelling) One-piece production using the flow principle (one-piece flow) Set-up time reduction (SMED "Single Minute Exchange of Die") Employee participation and responsibility Process standardisation and improvement work (Kaizen) Planning, steering and communicating successful change processes 										
4	Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises										
5	Formal: Content	ation require - : -	ments:								
Ì	Forms of assessment: Term paper, written examination, project work or oral examination										
6			en examination	n, pro	ject w	ork or	oral ex	aminatio	า		
6 7	Term pa	aper, writte site for the a	award of credit			ork or	oral ex	aminatio	1		
	Term po Prerequi Module	aper, writte site for the a examination	award of credit	points				aminatio	า		

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	-
12	Language:
	German

Loç	gistics IT	Systems							LES		
	ntification nber:	Workload:	Credits:				Frequen offer	cy of the	Durati	Duration: 1 semester	
321		150 h	5	4th	4th sem.		Annual (Summer)		1 sem		
1	Course:		Planned group	Scop	e	Actual time / classro teachir		Self-stu	ıdy		
	Lecture		60 students		2	SCH	0	h	64	h	
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	!	20 students		1	SCH	8	h	46	h	
	Practical seminar		15 students		1	SCH	16	h	0	h	
2	Supervis study Learning Studen	g outcomes/d	60 students competences:		1	SCH	16	h	0	h	
	 analyse and design logistical and digital business processes with regard to their requirements for information technology implementation model the requirements for the IT-relevant sub-processes (single-stage packaging) and outline their prerequisites and boundary conditions for integration into the higher-level IT systems (e.g. definition and validation of master data, modulation of interfaces, etc.). 										
3	Content	 S:									
3	Requirements on IT due to different tasks from different logistics areas (distributed, networked, mobile, transparent, integrated). IT interfaces (application of different standards, e.g. EDIFACT, VDA)										
	(e.g. d implem environ cold, hi Transpo selectio	evelopment entation ar ment and r gh-tempera ort manage on of telem	varehouse made of serial number of seria	mber of pictory for IT bood re c: Devents, even	mana ck-by- applic gulati elopm aluati	gement voice ations ons). nent of on of	nt), exte systems in differ data mo commoi	ensions (in logis ent envi dels for r n trackin	(e.g. sel tics prod ronment route plang and	ection cesses ts, e.g inning	
			and adaptation e of action of							(MES	
	Forms of teaching:										
4	Learnin	g units for	self-study, cla	assroo	m eve	ents in	the forr	n of exer	cises ar	nd	
4	Learnin practica	g units for		assroo	m eve	ents in	the forr	n of exer	cises ar	nd	

	Content:	-							
6	Forms of asses	ssment:							
		written examination, project work or oral examination							
7		or the award of credit points:							
	Module examination pass and course assessment								
8	Application of	the module (in the following study programmes)							
	Digital Logist	ics (work-integrated) B.Eng.							
9	Importance of	the grade for the final grade:							
	according to	BRPO							
10	Module coordi	nator:							
	Prof. DrIng	. Jörg Nottmeyer							
11	Other informa	tion:							
	-								
12	Language:								
	German								

	erial Flo	ow Tech	nolo	ogy						ILG		
Iden num	tification ber:	Workloa	d:	Credits:	Study semester:			Frequency of the offer		Duratio	Duration:	
321		150 h		5	2nd	nd sem.		Annual (Summer)		1 sem	1 semester	
1	Course:		F	Planned group sizes)e	Actual contact time / classroom teaching		Self-stu	Self-study	
	Lecture			50 students		2	SCH	0	h	56	h	
	Tuition i	n semina	s 3	30 students		0	SCH	0	h	0	h	
	Exercise		2	20 students		1	SCH	8	h	54	h	
	Practica seminar		1	15 students		1	SCH	16	h	0	h	
2	Supervis			50 students mpetences:		1	SCH	16	h	0	h	
	 informational interfaces to suppliers and customers. conceptualise the essential requirements for efficient and effect material flow systems on the basis of the logistics components. evaluate and define planning basics for effective operation the rightensport and storage equipment. interpret equipment-specific technology data for the selection, operat and fall-out scenarios of all logistics technology systems 								e right			
2					ific te	echno				tion, ope	eration	
3	Content	s: Systema construc determir Planning conveyir conveyir storage s Applicati of Sanke systems concepts Evaluatio systems environn Standard and trans ff).	tic c tive c ation, vis g, st g lo syste on of (KL nenta ls, g	lassification design as we n of applicati ualisation, c torage and h ads, creatio	of imell as to capacinandlin of meculation coptine etc.), oncepud law	aplem their oncep tive on ateria on of nising packa des ts an	ents, e products and dimens chnique capacit al flow production g times aging for dign of d facility	evaluation t and operating ioning ar es and co approach ctivity ra be based proach packag ties (prespectation)	n of the erating of conditions in consisting cycles in	technic characte ions nical des , calcula conveyir uding cr commiss 1 / REFA n materi les and packagir eyors. S	cal and ristics, sign of tion of and reation sioning A time al flow I their ng) torage	
3	Contents • Forms o	s: Systema construc determir Planning conveyir conveyir storage s Applicati of Sanke systems concepts Evaluatio systems environn Standard and trans ff).	tic c tive of ation, vis g, st g lo system on of (KL nentals, g	lassification design as wen of application, colorage and hads, creationems. If planning a agrams, calcoroaches to product-spectry pallets all disposal colorage and tequipment,	of imell as tion cocapacinandlin of mecific petc.), oncepid law safet	aplematheir onceptive of ateria on of nising packates and a sy and	ents, e products and dimens chnique capacit al flow product gright of dign of d facility the opt	evaluation t and operating ioning ares and control approach ctivity rates based or suitab packageties (prespendental	n of the erating of concepts, ims of on MTM le use ir ing cycsing of convergulation regulation.	technic characte ions nical des calcula conveyir uding cr commiss 1 / REF/ n materi les and packagin eyors. S ions (VD	ral and ristics, sign of tion of and reation al flow I their ng) torage I 2490	
	Contents • Forms o	s: Systema construc determir Planning conveyir conveyir storage s Applicati of Sanke systems concepts Evaluatio systems environn Standard and trans ff). f teaching g units f	tic c tive of ation, vis g, st g lo system on of (KL nentals, g	lassification design as wen of application addisation, colorage and hads, creations. If planning a agrams, caloroaches to product-spectry pallets al disposal couldelines an	of imell as tion cocapacinandlin of mecific petc.), oncepid law safet	aplematheir onceptive of ateria on of nising packates and a sy and	ents, e products and dimens chnique capacit al flow product gright of dign of d facility the opt	evaluation t and operating ioning ares and control approach ctivity rates based or suitab packageties (prespendental	n of the erating of concepts, ims of on MTM le use ir ing cycsing of convergulation regulation.	technic characte ions nical des calcula conveyir uding cr commiss 1 / REF/ n materi les and packagin eyors. S ions (VD	ral and ristics, sign of tion of and reation sioning A time al flow torage I 2490	
	Forms o Learnin practica Participa	s: Systema construc determir Planning conveyir conveyir storage s Applicati of Sanke systems concepts Evaluatio systems environn Standard and trans ff). f teaching g units f	tic continued tick continued to the cont	lassification design as wen of application design as wen of application, control of ads, creations. If planning a agrams, calcoroaches to product-special disposal control dispo	of imell as tion cocapacinandlin of mecific petc.), oncepid law safet	aplematheir onceptive of ateria on of nising packates and a sy and	ents, e products and dimens chnique capacit al flow product gright of dign of d facility the opt	evaluation t and operating ioning ares and control approach ctivity rates based or suitab packageties (prespendental	n of the erating of concepts, ims of on MTM le use ir ing cycsing of convergulation regulation.	technic characte ions nical des calcula conveyir uding cr commiss 1 / REF/ n materi les and packagin eyors. S ions (VD	ral and ristics, sign of tion of and reation al flow I their ng) torage I 2490	
4	Forms of Learning practical	s: Systema construc determir Planning conveyir conveyir storage : Applicati of Sanke systems concepts Evaluatio systems environn Standard and trans ff). f teaching g units f	tic continued tick continued to the cont	lassification design as wen of application design as wen of application, control of ads, creations. If planning a agrams, calcoroaches to product-special disposal control dispo	of imell as tion cocapacinandlin of mecific petc.), oncepid law safet	aplematheir onceptive of ateria on of nising packates and a sy and	ents, e products and dimens chnique capacit al flow product gright of dign of d facility the opt	evaluation t and operating ioning ares and control approach ctivity rates based or suitab packageties (prespendental	n of the erating of concepts, ims of on MTM le use ir ing cycsing of convergulation regulation.	technic characte ions nical des calcula conveyir uding cr commiss 1 / REF/ n materi les and packagin eyors. S ions (VD	ral and ristics, sign of tion of and reation al flow I their ng) torage I 2490	

6	Forms of assessment:
	Term paper, written examination, project work or oral examination
7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Jörg Nottmeyer
11	Other information:
12	Language:
	German

Mat	thematic	s I								MATH	1 1			
Identification number:		Workload:		Credits: Stud		y semester:		Frequen offer	cy of the	Durati	Duration:			
321	8	150 h		5	1st s	1st sem.			Annual (Winter)		1 semester			
1	Course:		PI	anned group	sizes	Scop)e	Actual contact time / classroom teaching		Self-stu	ıdy			
	Lecture		60) students		2	SCH	0	h	56	h			
		n semina) students		0	SCH	0	h	0	h			
	Exercise) students		2	SCH	16	h	62	h			
	Practical seminar			5 students		0	SCH	0	h	0	h			
2	Supervis			o students npetences:		1	SCH	16	h	0	h			
3	algebra	, which ogy, sci	n the	terms and y can also and busines	о арр									
	 General basics (set theories, inequalities, propositional logic, methods of proof) Functions of one variable (limit and continuity, polynomial functions, rational functions, trigonometric functions, exponential function, logarithm function) Differential calculus for functions of one variable (differentiability, derivation rules, applications) Linear algebra (vectors, matrices, determinants, systems of linear equations, eigenvalues and eigenvectors) 								S,					
4	Forms of teaching:													
				f-study, cla	ssroo	m ses	ssions	in the fo	rm of ex	ercises				
5		ition requ	uireme	nts:										
	Formal: Content													
6		f assessr												
				combined (exami	natio	n, oral	examin	ation or (examina	ition			
		the cour		ard of credit	oointo									
7		examin			oumts:									
7					lowing	ctudy	/ progr	ammoc)						
7		ion of the	Application of the module (in the following study programmes)											
8	Applicat				_	Digital Logistics (work-integrated) B.Eng., Digital Technologies (work-integrated) B.Eng., Mechatronics /Automation (work-integrated) B.Eng., Pro-								
	Applicat Digital	Logistics	s (wor	k-integrated	d) B.E					ork-me	grateu			
	Applicat Digital B.Eng., duct Se	Logistics Mechat rvice Er	s (wor ronics nginee	k-integrated /Automatid ring work-ir	d) B.E on (wo ntegra	ork-in ated E	tegrat	ed) B.En	ig., Pro-					
8	Applicat Digital B.Eng., duct Se	Logistics Mechat rvice Er ement (v	s (wor ronics nginee work-i	k-integrated /Automatid ring work-in ntegrated)	d) B.E on (wo ntegra B.Eng	ork-in ated E	tegrat	ed) B.En	ig., Pro-					
8	Applicat Digital B.Eng., duct Se Manage Importa	Logistics Mechatervice Erement (value)	s (wor ronics nginee work-i e grad	k-integrated /Automatid ring work-ir	d) B.E on (wo ntegra B.Eng	ork-in ated E	tegrat	ed) B.En	ig., Pro-					
9	Applicat Digital B.Eng., duct Se Manage Importa accordi	Logistics Mechat rvice Er ment (version to be seen to b	s (wor ronics nginee work-i e grad RPO	k-integrated /Automatid ring work-in ntegrated)	d) B.E on (wo ntegra B.Eng	ork-in ated E	tegrat	ed) B.En	ig., Pro-					
8	Applicat Digital B.Eng., duct Se Manage Importa accordi	Logistics Mechatervice Erement (vance of the logical to BF coordinates)	s (wor ronics nginee work-i e grad RPO tor:	k-integrated /Automatid ring work-in ntegrated) e for the fina	d) B.E on (wo ntegra B.Eng	ork-in ated E	tegrat	ed) B.En	ig., Pro-					
9	Applicat Digital B.Eng., duct Se Manage Importa accordi Module o Dr. rer.	Logistics Mechat rvice Er ment (version to be seen to b	s (wor ronics nginee work-i e grad RPO tor:	k-integrated /Automatid ring work-in ntegrated) e for the fina	d) B.E on (wo ntegra B.Eng	ork-in ated E	tegrat	ed) B.En	ig., Pro-					

12	Language:
12	199
	German

Mic	rocontro	oller Progr	ramming						MCP	
Identification \ number:		Workload:	Credits: Stud		y semester:		Frequency of the offer		Duration:	
322		150 h	5	6th	6th sem.		Annual (Summer)		1 semester	
1	Course:		Planned group	Planned group sizes		е	Actual contact time / classroom teaching		Self-stu	udy
	Lecture		60 students		2	SCH	0	h	56	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		1	SCH	8	h	46	h
	Practical seminar		15 students		1	SCH	16	h	0	h
2	Supervis study		60 students competences:		1.5	SCH	24	h	0	h
3	Contents	learn the keepsingle-boar get hands-product are capable can evaluate embedded can translade product are leastest Embedded microcontr	edded System chnologies (Et on technology nd tools of em systems platfollers, etc.)	e in od cloud ks. ting the udger require king in the character (barconbedde orms of the converse of the conver	desigration designation design	of Thick canners terms Arduni	all hards all hards t system viable efficience ings' (Io etcoth, e rs, RFID and IoT o/Energ	e-based rever M2M of ware project or product technical cy and material etc.). T) etc.). systems ia, Raspbart	microcol commur ects. ducts ba concep odularit	ntrolle nicatio nsed o ots an y.
4	Learnin practica	•	self-study, cla	issroo	m eve	ents in	the form	m of exer	cises ar	nd
5	Formal:	-	пынз.							
6	Forms o	f assessmen	t: en examinatio	n, pro	ject w	ork o	oral ex	aminatio	n	
7	Prerequi	site for the a	award of credit	points						
			on pass and co							
8	Digital	Logistics (w ted) B.Eng.	odule (in the fo vork-integrate and Industria	d) B.E	ing., I	vlecha	tronics/A			k-

	B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Christian Stöcker
11	Other information:
	-
12	Language:
	German

Оре	erations	Rese	arch							MOR				
Iden num	tification ber:	Work	load:	Credits:				Frequen offer	cy of the	Durati	Duration:			
3219		150	h	5	2nd	2nd sem.			er)	1 semester				
1	Course:			Planned group	Scop	e	Actual contact time / classroom teaching		Self-stu	ıdy				
	Lecture			60 students		1	SCH	0	h	56	h			
	Tuition i	n sem	inars	30 students		0	SCH	0	h	0	h			
	Exercise			20 students		3	SCH	24	h	46	h			
	Practical seminar	or		15 students		0	SCH	0	h	0	h			
	Supervised self- study		60 students		1.5	SCH	24	h	0	h				
2	_		omes/c	competences:										
	Studen		1			. 1	. 411-							
				operations r	esearc	en me	etnoas	and n	nodels li	n a sitt	uation-			
			•	manner.	troals	world	proble	ome fron	a tha fial	d of oco	nomics			
				solve relevant										
	and in particular logistics with the help of suitable models and methods of operations research or to provide decision support.													
	'	орега	110113	research or to	ρισνι	ue ue	CISIOII	support						
3	Contents	S:												
	Introduction to Operations Research													
	Models in Operations Research													
				of Operations										
				otimisation										
	•	Funda	ment	als of Graph 1	Theory	·V								
	•	Trans	port p	roblems	'									
	•	Intege	er opti	imisation prob	olems	(pure	-integ	er linear	optimisa	ation				
				napsack prob										
				ial optimisati							nd trip			
				postman pr				planning	j proble	ems, m	achine			
				roblems, loca										
				timisation (ba	atch si	ze pla	anning)						
4	Forms of		_	ا المالة عليه						' -				
		•		self-study, cla	assroo	m ses 	sions	in the fo	rm of ex	ercises				
5	Participa	ition re	equirer	ments:					· · · · ·	-	· · · · · · · · · · · · · · · · · · ·			
	Formal:		-											
	Content		-											
			Modu											
	Forms -	f occes		3 Mathematics	5 I;									
6	Forms of						lla-	malaati	ا د د داسم	01/25/1	a+!			
				on, combination		ımına	uon, p	roject w	ork, oral	examin	ation			
l	ı or exan			ring the cours										
7														
7	Prerequi				points.		Module examination pass							
	Prerequi Module	exam	ninatio	n pass			/ progra	ammes)						
	Prerequi Module Applicati	exam	ninatio the mo	on pass odule (in the fo	llowing	study			nologies	work				
	Prerequi Module Applicati Digital	examon of Logist	nination the modics ics (w	n pass	llowing	study			nnologies	(work-				
7 8	Prerequi Module Applicati Digital I integra	examon of Logisted) B	nination the modelics (w. B.Eng.	on pass odule (in the fo	llowing d) B.E	study ing. a			nnologies	(work-				

10	Module coordinator:
	Dr. rer. nat. Sabrina Proß
11	Other information:
	-
12	Language:
	German

Per	sonnel a	and Organ	isa	ition						PUO	
	Identification Workload number:			Credits:	Study	y sem	ester:	Frequency of the offer		Duratio	on:
301	1	150 h		5	7th s	sem.		Annual (Winter			ester
1	Course:		PI	anned group	Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60) students		2	SCH	0	h	56	h
	Tuition i	n seminars	30	O students		0	SCH	0	h	0	h
	Exercise	!	20) students		2	SCH	16	h	62	h
	Practical seminar		15	15 students		0	SCH	0	h	0	h
	Supervis study	sed self-	60) students		1	SCH	16	h	0	h
2	Learning	g outcomes/d	com	npetences:			•	•			
	They I	know the	es	oasic overvi ssential me sonnel eval	ethod	s of	pers	onnel r	ecruitme	nt, per	sonnel

suitability and applicability.

They are familiar with essential theoretical concepts on communication, understand the problems that can occur during the communication process and have practised possible solutions.

They understand the importance of learning for change processes and can shape the conditions for successful learning.

They can explain the principles of organisational theory and have checked their significance using practical examples. They can use primary and secondary organisational forms with regard to their applicability.

They are familiar with important topics of organisational change and can assess their significance for entrepreneurial activity.

They have a basic knowledge of the characteristics and significance of key qualifications and have demonstrated this with the help of examples, e.g. in conflict resolution and motivational skills.

Contents:

- Significance, goals and tasks of human resource management
- Fundamentals of labour law
- Fundamentals of communication
- Fundamentals of learning theory
- Environmental conditions, learning control, lifelong learning strategies
- Organisational and operational structure, forms of primary and secondary organisation
- Organisational change
- Personnel management and conflict resolution

Forms of teaching:

Learning materials for self-study, classroom events in the form of exercises

Participation requirements: 5

> None Formal:

	Content:	None							
6	Forms of asses	ssment:							
	Term paper, written examination, performance examination, project work or								
	oral examina	tion							
7	Prerequisite for the award of credit points:								
	Module examination pass								
8	Application of	the module (in the following study programmes)							
	Digital Logis	tics (work-integrated) B.Eng., Mechatronics/Automation (work-							
	integrated)	B.Eng. and Industrial Engineering and Management (work-							
	integrated) E	Eng.							
9	Importance of	the grade for the final grade:							
	according to	BRPO							
10	Module coordi	nator:							
	Economist Ul	rike Franke							
11	Other informa	ion:							
12	Language:								
	German								

Pra	ctical M	odule I							PX1		
Identification number:		Workload:	Credits:	Stud	y sem	ester:	Frequency of the offer Annual (Winter)		Durat	Duration:	
311	2	150 h	5	3rd	3rd sem.				1 semester		
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-st	Self-study	
	Lecture		60 students		0	SCH	0	h	150	h	
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	<u>)</u>	20 students		0	SCH	0	h	0	h	
	Practica seminar		15 students		0	SCH	0	h	0	h	
	study	sed self-	60 students competences:		0	SCH	0	h	0	h	
	under practical conditions during the work term at the company and solution options are developed independently. In addition to the professional competence, the students acquire the ability of working scientifically and successively develop it further.										
3	Content	S:									
	oriente betwee	d towards to the stude	worked on reserved to the module coent, the faculted sciences.	ntents	of th	e curr	iculum.	The topic	is coor	dinated	
4	Forms o	f teaching:									
	Work-related module										
5	Participa	ation require	ments:								
	Formal:	-									
	Content										
6		f assessmen	t:								
	Term p										
7	Prerequisite for the award of credit points: Module examination pass										
0			on pass odule (in the fo	llowing	n etud	/ nrogr	ammos)				
8			ork-integrate					logies (w	ork-		
			, Mechatronic								
			ngineering (w								
	Engine	ering and M	anagement (work-i	ntegr						
9	Importa	nce of the gi	rade for the fina	al grad	e:		<u>J</u>				
		ng to BRPO									
10		coordinator:	17.								
			rea Kaimann								
11	Other in	formation:									
12	- Languag	JO.									
12	German										
	Jermai	1									

	ectical M	lodule II							PX2	
	ntification nber:	Workload:	Credits:	Study semester:		Frequenc offer	y of the	Duratio	on:	
312	22	150 h	5	5th	5th sem.		Annual (Winter)		1 semester	
1	Course:		Planned grou	p sizes	Scop	e e	Actual of time / classroot teaching	om	Self-stu	dy
	Lecture		60 students		0	SCH	0	h	150	h
	Tuition	in seminars	30 students		0	SCH	0	h	0	h
	Exercise	9	20 students		0	SCH	0	h	0	h
	Practica seminar	-	15 students		0	SCH	0	h	0	h
	study	sed self-	60 students competences:		0	SCH	0	h	0	h
2	the stu it furth	dents acqui er.	ped independ ire the ability							
3	Contents: The topics to be worked on must be related to engineering science and be oriented towards the module contents of the curriculum. The topic is coordinated between the student, the faculty tutor in the company and the examiner at the university of applied sciences.									
	oriente betwee	pics to be d towards t en the stude	he module co ent, the facult	ntents	of th	e curri	culum. Tl	ne topic	is coord	inated
4	oriente betwee univers	pics to be d towards t en the stude	he module co ent, the facult ed sciences.	ntents	of th	e curri	culum. Tl	ne topic	is coord	inated
•	oriente betwee univers Forms o Work-r	pics to be ad towards to the stude sity of applications of teaching:	he module co ent, the facult ed sciences. ule	ntents	of th	e curri	culum. Tl	ne topic	is coord	inated
4	oriente betwee univers Forms o Work-r Participa Formal:	pics to be d towards to the stude sity of application require modern mod	he module co ent, the facult ed sciences. ule	ntents ty tuto	of th	e curri he con	culum. Ti	ne topic d the ex	is coord	inated
5	oriente betwee univers Forms c Work-r Participa Formal: Content	pics to be d towards ten the stude sity of application require mode: pics to be determined and a tion require mode: mode:	he module co ent, the facult ed sciences. ule ments: ule examinati	ntents ty tuto	of th	e curri he con	culum. Ti	ne topic d the ex	is coord	inated
5	oriente betwee univers Forms of Work-r Participa Formal: Content Forms of	pics to be d towards to en the stude sity of applie of teaching: elated mod ation require mod en to a to be mod ation require contact and a to a t	he module co ent, the facult ed sciences. ule ments: ule examinati	ntents ty tuto	of th	e curri he con	culum. Ti	ne topic d the ex	is coord	inated
5	oriente betwee univers Forms of Work-r Participa Formal: Content Forms of Term p	pics to be d towards to en the stude sity of applie of teaching: elated mod ation require mod en to a see the content of the c	he module coent, the faculted sciences. ule ments: ule examinatit:	ntents by tuto	s of the	e curri he con	culum. Ti	ne topic d the ex	is coord	inated
•	oriente betwee univers Forms of Work-r Participa Formal: Content Forms of Term p Prerequ	pics to be ad towards to the stude sity of applie of teaching: elated mod ation require mod is - of assessmen paper isite for the a	he module coent, the faculted sciences. ule ments: ule examinatit:	ntents by tuto	s of the	e curri he con	culum. Ti	ne topic d the ex	is coord	inated
5	Forms of Work-r Participa Formal: Content Forms of Term p Prerequ Module Applicat Digital integra	pics to be d towards to the stude sity of applies of teaching: elated modulation require modulation require apper siste for the apper siste for th	he module coent, the faculted sciences. ule ments: ule examinatit:	points pollowinged) B.Ess/Auto	s of the series	e curri he con work-re y progra Digital on (wo	elated mo	ne topic d the ex odule I gies (wated) B	is coord xaminer ork- .Eng., Pr	at the
5 6 7	Forms of Work-r Participa Formal: Content Forms of Term p Prerequ Module Applicat Digital integra Service Manage	pics to be d towards to the stude sity of applies of teaching: elated modulation require modulation require site for the appearance examination of the multiple because the examination of the multiple examination of the examination of the multiple examination of the examination of the multiple examination of the examinatio	he module coent, the faculted sciences. ule ments: ule examination pass odule (in the facult for pass) odule (in the facult	points points points points points pllowing ed) B.E. grated B.Eng	s of the print the state of the	e curri he con work-re y progra Digital on (wo	elated mo	ne topic d the ex odule I gies (wated) B	is coord xaminer ork- .Eng., Pr	inated at the
5 6 7	oriente betwee univers Forms of Work-r Participa Formal: Content Forms of Term p Prerequ Module Applicat Digital integra Service Manage Importa	pics to be d towards to the stude sity of applies of teaching: elated modulation require modulation require siste for the alexamination of the manager seement (worted) B.Eng. Engineering modulation of the grante of the grante of the grante of the grante to BRPO	he module coent, the faculted sciences. ule ments: ule examinati t: award of credit on pass odule (in the forwork-integrated), Mechatronic (work-integrated) rade for the fin	points points points points points pllowing ed) B.E. grated B.Eng	s of the print the state of the	e curri he con work-re y progra Digital on (wo	elated mo	ne topic d the ex odule I gies (wated) B	is coord xaminer ork- .Eng., Pr	at the
5 6 7 8 8	oriente betwee univers Forms of Work-r Participa Formal: Content Forms of Term p Prerequ Module Applicat Digital integra Service Manage Importa accordi Module	pics to be d towards to the stude sity of applies of teaching: elated modulation require modulation require isite for the appearance examination of the material condition of the graph of	he module coent, the faculted sciences. ule ments: ule examinati t: award of credit on pass odule (in the forwork-integrated), Mechatronic (work-integrated) rade for the fin	points points points points points pllowing ed) B.E. grated B.Eng	s of the print the state of the	e curri he con work-re y progra Digital on (wo	elated mo	ne topic d the ex odule I gies (wated) B	is coord xaminer ork- .Eng., Pr	at the
5 6 7	Forms of Work-r Participal Formal: Content Forms of Term p Prerequ Module Applicat Digital integral Service Manage Importal accordi Module Prof. D	pics to be d towards to the stude sity of applies of teaching: elated modulation require modulation require isite for the appearance examination of the material condition of the graph of	he module coent, the faculted sciences. ule ments: ule examination t: award of credited pass odule (in the forwork-integrated) rade for the fin	points points points points points pllowing ed) B.E. grated B.Eng	s of the print the state of the	e curri he con work-re y progra Digital on (wo	elated mo	ne topic d the ex odule I gies (wated) B	is coord xaminer ork- .Eng., Pr	at the
5 6 7 8	Forms of Work-r Participal Formal: Content Forms of Term p Prerequ Module Applicat Digital integral Service Manage Importal accordi Module Prof. D	pics to be d towards to the stude sity of applies of teaching: elated modulation require modulation for the appear isite for the appear isite for the appear isite for the appear isite for the appear is to be appeared by the condition of the graph of th	he module coent, the faculted sciences. ule ments: ule examination t: award of credited pass odule (in the forwork-integrated) rade for the fin	points points points points points pllowing ed) B.E. grated B.Eng	s of the print the state of the	e curri he con work-re y progra Digital on (wo	elated mo	ne topic d the ex odule I gies (wated) B	is coord xaminer ork- .Eng., Pr	at the

ster:								
	Frequency of the offer Annual (Summer)		Duration: 1 semester					
)	Actual contact time / classroom teaching		Self-study					
SCH	0	h	150	h				
SCH	0	h	0	h				
SCH	0	h	0	h				
SCH	0	h	0	h				
SCH	0	h	0	h				
under practical conditions during the work term at the company and solution options are developed independently. In addition to the professional competence, the students acquire the ability of working scientifically and successively develop it further.								
curric	engine culum. The pany and	ne topic	is coord	inated				
Forms of teaching: Work-related module								
Participation requirements: Formal: module examination pass in work-related module II								
Content: -								
nrogra	mmes)							
		aios (w	ork					
				nduct				
Service Engineering (work-integrated) B.Eng. and Industrial Engineering and Management (work-integrated) B.Eng.								
	11 Other information:							
r	า์ (woi	າ (work-integra	n (work-integrated) B.	igital Technologies (work- n (work-integrated) B.Eng., Pr g. and Industrial Engineering a				

Pro	duction	Planning	and	d Control						PPS		
	Identification Workload: number:			Credits: Stud		y semester:		Frequency of the offer		Duration:		
302	3024 150 h			5	6th sem.			Annual (Summe	Annual (Summer)		1 semester	
1	Course:		PI	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60) students		2	SCH	0	h	56	h	
	Tuition in seminars		30) students		0	SCH	0	h	0	h	
	Exercise	!	20) students		2	SCH	16	h	62	h	
	Practica seminar		15	students		0	SCH	0	h	0	h	
	Supervis study	sed self-	60	60 students		1	SCH	16	h	0	h	

2 Learning outcomes/competences:

Students understand the business fundamentals and interrelationships of production management.

The students can apply tools and methods of production planning and control to practice-oriented examples.

They are able to evaluate the planning results in terms of plausibility and efficiency and to assess their impact on holistic business processes between suppliers and customers.

The students understand the procedures in the sub-processes of product planning and are able to evaluate the information exchanged between the sub-processes and assess it with regard to the effects in other planning steps.

Students understand the core and cross-sectional functions of production planning and control systems on the basis of data management (PPS systems) depending on the respective business typology and can classify them in context.

3 Contents:

- Operational tasks in the area of production planning and control
- Relationship between development and the production processes to be planned; production-oriented product design
- Market requirements for production processes and their control
- Typical areas of EDP application to support production planning and control
- Information flow and associated data structures in the IT systems (master data management: material master, parts lists, workstation master, routings)
- Programme planning and primary needs assessment
- Material requirements planning with BOM explosion and net requirements planning
- Scheduling and capacity balancing
- · Order processing and production order management,
- Mapping a Kanban control system
- Shipping preparation, delivery and invoicing
- Computer-aided production planning and controlling

4	Forms of teach	ning:						
	Learning ma	terials for self-study, classroom events in the form of exercises						
		· ·						
5	Participation requirements:							
	Formal:	None						
	Content:	None						
6	Forms of asse	ssment:						
	Term paper, written examination, project work or oral examination							
7	Prerequisite for	or the award of credit points:						
	Module examination pass							
8		the module (in the following study programmes)						
	Digital Logistics (work-integrated) B.Eng.							
9	Importance of	the grade for the final grade:						
	according to	BRPO						
10	Module coordi	nator:						
	Prof. Dr. rer.	oec. Pascal Reusch						
11	Other informa	tion:						
	Supplementa	ary literature will be announced at the beginning of the course.						
12	Language:							
	German							

Qua	ality Mar	nagement							QMO	3
	ntification nber:	Workload:	Credits:	Stud	y sem	ester:	Frequer offer	ncy of the	Dura	tion:
320		150 h	5	or 6th ester		Annual (Summer)		1 semester		
1	Course:		Planned group	sizes	Scop	e	Actual time / classro teachi	oom	Self-s	tudy
	Lecture		60 students		2	SCH	0	h	56	h
		n seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		2	SCH	16	h	62	h
	Practica seminar		15 students		0	SCH	0	h	0	h
2	study	sed self-	60 students competences:		1	SCH	16	h	0	h
_	Studen	ts:	ine/assess the	o "valı	ام" (د	nst/ha	anafit) o	f quality	for a c	omnanı
3	Content	of a compa s: The term 'c Basics of qu QMS in the Terms and Analysis of Strategies to cycle) Tools, proces	uality' uality manage company definitions in the costs/ben for increasing	ment quality efits c and e	syste y mar of a Q nsuri	ms (Q nagem M syst ng 'qua es, pro	MS), tas ent eem ality' in	sks and o	bjectiv any (P	es of DCA
	manage Overare	ement in th ching aspec	ne successful e e company ts of quality n			Ū		·		on, etc.
4		f teaching: g units for	self-study, cla	issroo	m ses	ssions	in the fo	orm of ex	ercises	3
5	Participa Formal:	ation require -	ments:							
	Content									
5		f assessmen								
7	Prerequi	isite for the a	en examination ward of credit			ork or	oral ex	amınatio	n	
		examinatio								
8	Digital integra	Logistics (w	odule (in the fo ork-integrate and Industria	d) B.E	ing., i	Produc	t Servic			work-

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	-
12	Language:
	German

	counting	, Investm	ent, Financin	ng and	d Tax	es			RIF		
	ntification nber:	Workload:	ad: Credits: Study se			ester:	er: Frequency of the offer		Duratio	Duration:	
3223 150 h		150 h	5 2nd sem.			Annual (Summer)		1 semester			
1	Course:		Planned group) sizes	Scop	oe .	Actual of time / classroot teachin		Self-stu	dy	
	Lecture		60 students		2	SCH	0	h	56	h	
	Tuition	in seminars	30 students		0	SCH	0	h	0	h	
	Exercise	9	20 students		2	SCH	16	h	62	h	
	Practica seminar		15 students		0	SCH	0	h	0	h	
	Supervi	sed self-	60 students		1	SCH	16	h	0	h	
2	Learning	g outcomes/o	competences:							•	
				asscs.	s anu	interp	ret the p	ractical	аррисан	ions o	
	Further entrepr The stu their ef	rmore, they reneurial ac udents knov ffects in bus	procedures wi	ith re rate a ecision f comp	gard a prof a-mak	to the fitability are	y-oriente eas.	ance of ed asses	their re sment ii	esults nto al	
3	Further entrepr The stutheir ef	rmore, they reneurial acudents know fects in bus accounting Fundament Fundament Fundament Fundament Static investic introductio Cost type, Short-term	principles als of external, als of business decisions of external, als of business stment calcular vestment calcular to cost according to the cost accordi	Ith retrate a secision from pas. Il state on al finterral mathes investion in culation untingost uningest uniterated and uniterated an	gard a profa-make cany- emen nanci nal, echema estme netho n me g it acc	t analy ng dec quity an tics nt decids thods	signific y-oriente eas. In taxes a sisions and debt f	ance of ed asses and are	their rosment in	esults. nto al	
3	Further entrepr The stutheir ef	rmore, they reneurial acudents know fects in bus sections in bus sections from the fects in the	principles and of the basics of siness decision principles als of financials of external, als of business the transport calculation to cost according to the cost centre, cost	al state and state on al state on al fi interral mathes investion in the control of the control of the control on all state on all stat	emen nancinal, echema estme netho n me g it accon fu	t analy ng dec quity and tics nt decinds thous and part of the counting	signific y-oriente eas. at taxes a sis isions and debt f	ance of asses and are a	their resment in	esults nto al	
4	Further entrepr The stutheir ef	rmore, they reneurial acudents know fects in bus accounting Fundament Fundament Fundament Static investing Dynamic in Introduction Cost type, Short-term Business tap feaching:	principles rals of financia rals of financia rals of financia rals of busines stment calcula vestment calcula vestment calcula rocost centre, contincome state rates and self-study, class of states	al state and state on al state on al fi interral mathes investion in the control of the control of the control on all state on all stat	emen nancinal, echema estme netho n me g it accon fu	t analy ng dec quity and tics nt decinds thous and part of the counting	signific y-oriente eas. at taxes a sis isions and debt f	ance of asses and are a	their resment in	esults. nto al	
	Further entrepr The stutheir ef	rmore, they reneurial acudents know fects in bus accounting Fundament Fundament Fundament Fundament Static investing Dynamic in Introductio Cost type, Short-term Business tap feaching: ag units for ation require	principles rals of financia rals of financia rals of financia rals of busines stment calcula vestment calcula vestment calcula rocost centre, contincome state rates and self-study, class of states	al state and state on al state on al fi interral mathes investion in the control of the control of the control on all state on all stat	emen nancinal, echema estme netho n me g it accon fu	t analy ng dec quity and tics nt decinds thous and part of the counting	signific y-oriente eas. at taxes a sis isions and debt f	ance of asses and are a	their resment in	esults. nto al	
4	Further entrepr The stutheir ef	rmore, they reneurial acudents know fects in bus fects fundament focts type, Short-term fects feaching: The feaching for feaching fundament for fundament	principles rals of financia rals of financia rals of financia rals of busines stment calcula vestment calcula vestment calcula rocost centre, contincome state rates and self-study, class of states	al state and state on al state on al fi interral mathes investion in the control of the control of the control on all state on all stat	emen nancinal, echema estme netho n me g it accon fu	t analy ng dec quity and tics nt decinds thous and part of the counting	signific y-oriente eas. at taxes a sis isions and debt f	ance of asses and are a	their resment in	esults. nto al	
4	Further entrepr The stutheir ef	rmore, they reneurial acudents know fects in bus fects fundament focts type, Short-term fects feaching: The feaching for feaching fundament for fundament	y can incorportivities and developments:	al state and state on al state on al fi interral mathes investion in the control of the control of the control on all state on all stat	emen nancinal, echema estme netho n me g it accon fu	t analy ng dec quity and tics nt decinds thous and part of the counting	signific y-oriente eas. at taxes a sis isions and debt f	ance of asses and are a	their resment in	esults nto al	

7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Economist Ulrike Franke
11	Other information:
	-
12	Language:
	German

Jiai	tistics								STAT	
Iden num	tification ber:	Workload:	Credits:	Stud	y sem	ester:	Frequency of the offer		Duratio	on:
322	4	150	5	3rd or sem	semester 4th ester		every semest		1 semester	
1	Course:		Planned group sizes				Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	0	h	56	h
		n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		2	SCH	16	h	62	h
	Practical seminar		15 students		0	SCH	0	h	0	h
2	Supervis		60 students competences:		1	SCH	16	h	0	h
	 can explain basic concepts of statistics. can apply the basic methods and procedures of descriptive statistics and probability theory. are able to analyse economic questions and problems with statistical methods and to show correlations. can work on tasks with the help of suitable software (SPSS, Excel,). 						tistical			
3	Contents	s:								
4	Descriptive statistics (one-dimensional frequency distributions, measures, multivariate statistics, regression analysis) Probability calculation (discrete and continuous distributions) Statistical interference Use of Excel/SPSS Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises									
5	Participa Formal: Content	ation require	ments:							
6			† ·							
0	Forms of assessment: Term paper, written examination, combined examination, project work, oral examination or examination accompanying the course									
	examin									
7	examin Prerequi		award of credit							
7	examin Prerequi Module Applicat Digital I B.Eng., Enginee (work-i	examination of the acceptance of the modern	award of credit on pass odule (in the fol vork-integrated nics /Automat -integrated) B B.Eng.	llowing d) B.E tion (s.Eng.	study ng., [workand l	y progra Digital -integr	ammes) Technolo ated) B	.Eng., Pi		
7	examin Prerequi Module Applicat Digital I B.Eng., Enginee (work-i Importa accordi	examination of the management of the management of the management of the management of the grant	award of credit on pass odule (in the fol ork-integrated nics /Automat -integrated) B B.Eng.	llowing d) B.E tion (s.Eng.	study ng., [workand l	y progra Digital -integr	ammes) Technolo ated) B	.Eng., Pi		
7	examin Prerequi Module Applicat Digital I B.Eng., Enginee (work-i Importa accordi	examination of the machine constitution of the machine constitution of the machine constitution of the grated of the grated coordinator:	award of credit on pass odule (in the fol ork-integrated nics /Automat -integrated) B B.Eng. rade for the fina	llowing d) B.E tion (s.Eng.	study ng., [workand l	y progra Digital -integr	ammes) Technolo ated) B	.Eng., Pi		
7 8	examin Prerequi Module Applicat Digital I B.Eng., Enginee (work-i Importa accordi Module o Dr. rer.	examination of the management of the management of the management of the management of the grant	award of credit on pass odule (in the fol ork-integrated nics /Automat -integrated) B B.Eng. rade for the fina	llowing d) B.E tion (s.Eng.	study ng., [workand l	y progra Digital -integr	ammes) Technolo ated) B	.Eng., Pi		

C

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12	Language:
	German

	ply-Cha	in Manage	ement						SCM	
Iden num	tification ber:	Workload:	Credits:				Frequen offer	cy of the	Durat	ion:
320	3208 150 h		5 5th		sem.		Annual (Winter)		1 sen	nester
1	Course:		Planned group	sizes	Scope		Actual time / classro teachir		Self-st	udy
	Lecture		60 students		2	SCH	0	h	56	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		2	SCH	16	h	62	h
	Practica seminar		15 students		0	SCH	0	h	0	h
	Supervis study		60 students		1	SCH	16	h	0	h
	industrial value chains and optimise them, especially with regard to the interfat between organisations. The students can evaluate value chains with regard to their most import performance parameters and derive optimisation proposals, especially on basis of digital technologies. Students will be able to analyse and design Lean concepts to cross-organisat information and material flow systems and Just-In-Time and Just-In-Sequ						oortant on the sationa			
3	option) Strateg	s: or buy deci ic and ope	sions (in-hous	•					·	
	availability of goods) Supply early warning systems Sourcing concepts (in- and outsourcing, local and global sourcing, sole, sing dual and multiple sourcing, parts and modular sourcing as well as other sourcincepts such as e-sourcing, cooperative sourcing, parallel sourcing etc.) Organisational processes in procurement and purchasing, in particular information and material flows between suppliers and customers up to									
	Organis informa	ts such as e sational pration and r	e-sourcing, co- rocesses in material flows	s and operar procuse betw	modu tive s ureme veen	ular sou ourcing ent ar suppli	urcing as g, parall nd purc ers and	s well as el sourcir hasing, custom	other song etc.) in paers up	ourcing rticular to the
4	Organis informa provisio to supp assessr Aspects	sational pration and ron of goods olier select ment, control of social roll feaching:	e-sourcing, corocesses in	s and operar procus between: from an arliting	modu tive s ureme veen m nati	ular sou ourcing ent ar suppli ional a nclusio	urcing as g, parall nd purc ers and nd interi n of co	s well as el sourcir hasing, custom national s	other so ng etc.) in pa ers up supplier up to s	ourcing rticular to the search
4	Organis informa provision to supply assessing Aspects	sational pration and ron of goods olier select ment, control of social roll feaching:	e-sourcing, concesses in material flows for production, negotiation, negotiation, and audiesponsibility	s and operar procus between: from an arliting	modu tive s ureme veen m nati	ular sou ourcing ent ar suppli ional a nclusio	urcing as g, parall nd purc ers and nd interi n of co	s well as el sourcir hasing, custom national s	other so ng etc.) in pa ers up supplier up to s	ourcing rticular to the search

	Content:	-						
6	Forms of asses	ssment:						
	Term paper, written examination, project work or oral examination							
7	Prerequisite for the award of credit points:							
	Module exam	nination pass						
8	Application of	the module (in the following study programmes)						
	Digital Logist	ics (work-integrated) B.Eng.						
9	Importance of	the grade for the final grade:						
	according to	BRPO						
10	Module coordii	nator:						
	Prof. Dr. rer.	oec. Pascal Reusch						
11	Other informa	tion:						
	-							
12	Language:							
	German							

Tec	hnical B	asics							TGL	
Iden num	tification ber:	Workload:	Credits: Study semeste			ester:	Frequenc	y of the	Duration:	
333			5	1st s	sem.		Annual (Winter)		1 semester	
1	Course:		Planned group	sizes	Scop	e	Actual of time / classroot teachin	om	Self-stu	ıdy
	Lecture		60 students		2	SCH	0	h	56	h
	Tuition i	n seminars	30 students		0	SCH	0	h	0	h
	Exercise	<u> </u>	20 students		1	SCH	8	h	54	h
	Practical seminar		15 students		1	SCH	16	h	0	h
	Supervis study		60 students		1	SCH	16	h	0	h
2	Learning Studen		competences:							
	•	storage rac design, pl constructio select the d logistics sys	or the design, ks, transport of an logistical notes that technology. correct, specifistems.	conve facili	yor sy ities	ystems using	s). the es	ssential	princip	les of
3	Contents	S:								
4	 Technical mechanics (statics, dynamics and strength theory) for the design and dimensioning of transport and storage systems (dimensioning of driven roller conveyors and their motor power, calculation of the load-bearing capacity of pallet racks, etc.) Application of the basics of construction technology and methods, standards and product design Technical drawing for the conception of technical systems and specifications (including conceptual design of simple mechanical and automatic storage systems) Fundamentals of materials science, evaluation and selection of application-specific materials and materials for storage systems under heterogeneous environmental conditions 									
4	Learnin	•	self-study, cla	ssroo	m eve	ents in	the form	of exer	cises an	ıd
5	practica Participa Formal: Content	ation require	ments:							
6	Forms o	f assessmen					_			
			en examination			ork or	oral exa	minatio	n	
7	•	examinatio	award of credit	points						
8			odule (in the fol	lowing	study	/ progr	ammes)			
			ork-integrate	-			•			
9	Importa	nce of the g	ade for the fina							
		ng to BRPO								
10		coordinator:	Mottes							
	Prof. Di	rIng. Jorg	Nottmeyer							

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11	Other information:
12	Language:
	German

	hnical E	nglish							TCE	
	ntification nber:	Workload:	Credits:	Credits: Study semester:			Frequency of the offer Annual (Winter)		Durat	ion:
312	1 150 h		5	1st, 3rd o sem	or 5th				1 semester	
1	Course:		Planned group	sizes	Scop	De	Actual time / classro teachin		Self-st	udy
	Lecture		60 students		2	SCH	0	h	56	h
	Tuition i	n seminars			0	SCH	0	h	0	h
	Exercise				0	SCH	0	h	0	h
	Practica seminar		15 students		2	SCH	32	h	46	h
2	Supervis study		30 students competences:		1	SCH	16	h	0	h
	 Methodological competence: They are able to skim specialist texts for essential information and present them shortly and concisely both in speaking and in writing. They establish wider contexts and make a critical assessment. Personal competence: They show English fluency and a pro-active approach to managing authentic English sources. 									
		5 5	authernic Eng	lish sc	_		епсу апс	та рго-а	ictive ap	oproach
3	Content: - St - Th pr - Th pit po Forms o Semina project	s: udents can ney maste ocesses; m echanisms; ney possess tching a to esters; acac f teaching: ur-based tea (Assignme	actively particer engineering properties of a interdiscipling interdiscipling demic writing).	cipate g-rele operat mater ary sl uct; r	in in vant ions; ials; a	ternati term dimer automa (e.g. d ging p	onal con inology nsions a ated sys iscussino projects;	ferences (e.g. nd shap tems and g reading designi	manufa es; forc I Indust gs and ng con	acturing ces and ry 4.0). trends;
	Content: - St - Th pr - Th pit po Forms o Semina project	s: udents can ley maste ocesses; mechanisms; ley possess tching a to osters; acac f teaching: ur-based tea (Assignme	actively particer engineering properties of a interdiscipling interdiscipling demic writing).	cipate g-rele operat mater aary sl uct; r	in in vant ions; ials; ails (mana	ternati term dimer automa (e.g. d ging p	onal con inology nsions a ated sys iscussing orojects; ork, etc.	ferences (e.g. nd shap tems and g reading designi	manufa es; forc I Indust gs and ng con	acturing ces and ry 4.0). trends;

6	Forms of assessment:
	Combination examination
7	Prerequisite for the award of credit points:
	Passed semester project and written exam
8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng., Digital Technologies (work-
	integrated) B.Eng., Mechatronics/Automation (work-integrated) B.Eng.,
	Product-Service Engineering (work-integrated) B.Eng. and Industrial
	Engineering and Management (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	OStR Cornelia Biegler-König
11	Other information:
	-
12	Language:
	English

	tification	Forwardin Workload:	g, Customs Credits:			ester:		ncy of the	TZR Durat	tion:
number:		Workload.	oreans.	Staa	y SCIII	icstci .	offer		Duration.	
322	5	150 h	5	7th	sem.		Annual (Winter)		1 semester	
1	Course:		Planned group	o sizes	Scop	oe	Actual time / classro teachi	oom	Self-st	udy
	Lecture		60 students		2	SCH	0	h	56	h
		n seminars	30 students		0	SCH	0	h	0	h
	Exercise	!	20 students		2	SCH	16	h	62	h
	Practical seminar		15 students		0	SCH	0	h	0	h
2	Supervis study		60 students competences:		1	SCH	16	h	0	h
3	 identify deficits and risks along the supply chain and develop suitable technical, organisational and information technology measures and concepts for risk management. evaluate process-related transactions in the transport sector with regard to process-specific issues from day-to-day operations (e.g. liability issues in the case of inappropriate pallet exchange). are familiar with the customs and foreign trade regulations of the international export and import laws that are applied in international trade and transport. Contents: IT applications to secure legal transactions in the transport sector. Concept and definition of international transport law, legal bases in transport law, national/international, analysis and activities of the parties involved in the transport business, civil and commercial bases of transport and insurance law, contractual bases and concepts. International contract of carriage for the international carriage of goods by road (CMR) Provisions of the HGB on the freight business, forwarding business and warehousing business						of the al trade . ases in parties ansport f goods ess and inciples			
4	Learnin		self-study, cla	assroo	m ses	ssions	in the fo	orm of ex	ercises	
5	Participa Formal: Content	ation require - : -	ments:							
6	Forms o	f assessmen		n, pro	iect v	vork or	oral ex	aminatio	n	
	Term paper, written examination, project work or oral examination Prerequisite for the award of credit points:									
7				P						
7	Module	examinatio		•		y progra	ammes)			

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	N. N.
11	Other information:
	-
12	Language:
	German

number: 3226 150 h 5 6th sem. Offer Annual (Summer) 1 set 1 Course: Planned group sizes Scope Actual contact Self-stope Lecture 60 students 2 SCH 0 h 56	Trar	nsport L	ogistics.								TLG		
150 h 5 6th sem. Annual (Summer) 1 set			Workload	:	Credits:	Stud	dy semester:				Durat	Duration:	
Lecture 60 students 2 SCH 0 h 56 Tuition in seminars 30 students 0 SCH 0 h 0 Exercise 20 students 2 SCH 16 h 62 Practical or 5 seminar 5 Supervised self-5 students 1 SCH 16 h 0 Supervised self-5 students 1 SCH 16 h 0 Learning outcomes/competences: Students: • can determine the importance and objectives of national and international transport and traffic logistics. • can classify the macroeconomic framework conditions for the trareand traffic industry. • can analyse the national and international markets and providers transport and transport logistics services. • understand the principles of national and international transport at transport logistics service provision. • can apply the individual management areas of transport manager 1 Service provision. • Contents: • Goals and tasks of national and international transport and traffic logistics • Service provision of national and international transport and traffic companies • Examples of questions relevant to transport technology, methods representation and description of transport technologies. • Requirements for transport technologies. Evaluation and selection procedure • Truck, air, rail and sea transport • Means of transport and carriers, container, loading and transs systems, combined transport • Information and communication management • Fleet management • Container and cargo management • Container and cargo management • Environmentally and climate-friendly, quiet and safe transport Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises Formal: - Content: - Forms of assessment: Term paper, written examination, project work or oral examination			150 h		5 6th		sem.		Annual		1 semester		
Tuition in seminars Tuition in seminars	1	Course:		Pl	anned group	sizes	Scop)e	time /	oom	Self-st	tudy	
Exercise 20 students 2 SCH 16 h 62 Practical or 15 students 0 SCH 0 h 0 seminar Supervised self-study 60 students 1 SCH 16 h 0 2 Learning outcomes/competences: Students: • can determine the importance and objectives of national and international transport and traffic logistics. • can classify the macroeconomic framework conditions for the trar and traffic industry. • can analyse the national and international markets and providers transport and transport logistics services. • understand the principles of national and international transport at transport logistics service provision. • can apply the individual management areas of transport manager 3 Contents: • Goals and tasks of national and international transport and traffic logistics • Service provision of national and international transport and traffic companies • Examples of questions relevant to transport technology, methods representation and description of transport technologies • Requirements for transport technologies. Evaluation and selection procedure • Truck, air, rail and sea transport • Means of transport and carriers, container, loading and transs systems, combined transport • Information and communication management • Container and cargo management • Environmentally and climate-friendly, quiet and safe transport 4 Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises 5 Participation requirements: Formal: Content: - Forms of assessment: Term paper, written examination, project work or oral examination		Lecture		60) students		2	SCH	0	h	56	h	
Practical or seminar Supervised self-study 2 Learning outcomes/competences: Students: • can determine the importance and objectives of national and international transport and traffic logistics. • can classify the macroeconomic framework conditions for the trar and traffic industry. • can analyse the national and international markets and providers transport and transport logistics services. • understand the principles of national and international transport at transport logistics service provision. • can apply the individual management areas of transport manager 3 Contents: • Goals and tasks of national and international transport and traffic logistics • Service provision of national and international transport and traffic companies • Examples of questions relevant to transport technology, methods representation and description of transport technologies • Requirements for transport technologies. Evaluation and selection procedure • Truck, air, rail and sea transport • Means of transport and carriers, container, loading and transs systems, combined transport • Information and communication management • Container and cargo management • Quality and performance management • Quality and performance management • Container and cargo management • Environmentally and climate-friendly, quiet and safe transport Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises 5 Participation requirements: Formal: Content: Forms of assessment: Term paper, written examination, project work or oral examination										h		h	
Seminar Supervised self-study Sudents 1 SCH 16 h 0		Exercise	!	20) students		2	SCH	16	h	62	h	
study 2 Learning outcomes/competences: Students:		seminar										h	
Students:	2	study					1	SCH	16	h	0	h	
Goals and tasks of national and international transport and traffic logistics Service provision of national and international transport and traffic companies Examples of questions relevant to transport technology, methods representation and description of transport technologies Requirements for transport technologies. Evaluation and selection procedure Truck, air, rail and sea transport Means of transport and carriers, container, loading and transs systems, combined transport Information and communication management Fleet management Container and cargo management Quality and performance management Environmentally and climate-friendly, quiet and safe transport Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises Participation requirements: Formal: Content: Forms of assessment: Term paper, written examination, project work or oral examination		•	and traffican analy transport understar transport can apply	se the and the logis	ustry. ne national transport lo e principles stics service	and ir ogistic of na e prov	nterna cs ser ationa ision.	ational vices. I and i	markets	s and pro	viders sport a	of and	
Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises Participation requirements: Formal: Content: Forms of assessment: Term paper, written examination, project work or oral examination		logistics Service provision of national and international transport and traffic companies Examples of questions relevant to transport technology, methods for the representation and description of transport technologies Requirements for transport technologies. Evaluation and selection procedure Truck, air, rail and sea transport Means of transport and carriers, container, loading and transshipment systems, combined transport Information and communication management Fleet management Container and cargo management											
5 Participation requirements: Formal: - Content: - 6 Forms of assessment: Term paper, written examination, project work or oral examination	4	Forms o	f teaching:					-					
Formal: - Content: - Forms of assessment: Term paper, written examination, project work or oral examination						ssroo	m ses	ssions	in the fo	orm of ex	ercises		
Content: - 6 Forms of assessment: Term paper, written examination, project work or oral examination	5	•	tion requi	emei	nts:								
6 Forms of assessment: Term paper, written examination, project work or oral examination			-										
Term paper, written examination, project work or oral examination													
	5												
Droroguisito for the award of credit points:								vork o	oral ex	aminatio	า		
7 Prerequisite for the award of credit points: Module examination pass	7					points							

8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Jörg Nottmeyer
11	Other information:
	-
12	Language:
	German

Pac	kaging	Technolog	y and Load S	Secur	ing				WVI	Γ	
	Identification Workload: number:		Credits:				Frequency of the offer		Dura	Duration:	
322		150 h	5 3rd		sem.		Annual (Winte		1 semester		
1	Course:		Planned group	o sizes	Scop	e l	Actual time / classro teachi	oom	Self-st	tudy	
	Lecture		60 students		2	SCH	0	h	56	h	
		n seminars	30 students		0	SCH	0	h	0	h	
	Exercise	!	20 students		2	SCH	16	h	62	h	
	Practica seminar		15 students		0	SCH	0	h	0	h	
2	study	sed self-	60 students competences:		1	SCH	16	h	0	h	
3	 evaluate the transport processes and the goods to be transported and their product-specific properties in accordance with the relevant technical standards and regulations. conceptualise and assess the resulting requirements for packaging, load unit formation, loading and load securing for goods and transport concepts (including shipping regulations) based on the essential technical principles of packaging technology. Contents: Selection, design of packaging means for goods (piece goods, bulk goods and liquids), determination and dimensioning of loading units and selection for transport and securing of loading units (e.g. mechanical or electronic seals for containers DIN ISO 18185). Optimum load distribution through centre of gravity calculation (e.g. load capacity of containers according to DIN 1496 payload calculation diagrams and simulation models as well as application-specific measures for load securing (straps, supports, etc.). Assessment of product- and cargo-specific transport risks and derivation of measures to avoid, prevent and mitigate damage (IMO classes, incoterms 2010, international sanctions lists). Load securing / securing devices / load and transport safety according to international standards and laws (e.g. VDI 2700 'Load securing on road vehicles) 										
	Forms of teaching: Learning units for self-study, classroom sessions in the form of exercises						in the fo	orm of ex	ercises		
4			Participation requirements:								
5	Participa Formal:	-	ments:								
5	Participa Formal: Content	: -									
	Participa Formal: Content Forms o Term p	- : - f assessmen aper, writte				vork or	oral ex	aminatio	n_		

8	Application of the module (in the following study programmes)
	Digital Logistics (work-integrated) B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Jörg Nottmeyer
11	Other information:
	-
12	Language:
	German

num 333			ing Systems						VSO		
333	tification ber:	Workload:	Credits:	Stud	y sem	ester:	Frequen offer	cy of the	Durat	Duration:	
1		150 h	5	5th	5th sem.			Annual (Winter)		1 semester	
1	Course:		Planned group	Scope		Actual contact time / classroom teaching		Self-study			
	Lecture		60 students	2 SCH		0	h	56	h		
	Tuition in seminars		30 students		0	SCH	0	h	0	h	
	Exercise	<u> </u>	20 students		1	SCH	8	h	54	h	
	Practica seminar		15 students		1	SCH	16	h	0	h	
2	Supervis		60 students competences:	1	SCH	16	h	0	h		
3	 regard to design requirements from the logistical processes. assess sorting and distribution systems in terms of logistical parameters (e.g. throughput times, picking frequencies, worst case failure scenarios). Contents: Use and selection criteria for sorting and distribution systems, determination and dimensioning of operating models and states in start-up, ramp-up and working areas Technical-constructive design and logistical application of storage and distribution systems in logistics facilities, calculation of mechanical elements of storage and conveying technology Measurement of energy efficiencies when using electric motors, calculation of losses and efficiencies, application of common test methods Application of material flow control principles (e.g. FIFO, LIFO) and application of visualisation methods (e.g. layout design of sorting and picking systems by means of flow chart representations) 										
	Forms of teaching: Learning units for self-study, classroom events in the form of exercises and practicals										
4	Learnin practica	als	J	assroo	m ev	ents in	the for	n of exer	cises a	nd	
	Learnin practica Participa Formal:	als ation require	J	assroo	m ev	ents in	the for	n of exer	cises a	nd	
5	Learnin practica Participa Formal: Content	als ation require	ments:	assroo	m ev	ents in	the for	n of exer	cises a	nd	
5	Learnin practica Participa Formal: Content Forms o Term p	als ation require : : f assessmen aper, writte	ments: t: en examinatio	n, pro	ject v					nd	
5	Learnin practica Participa Formal: Content Forms o Term p Prerequi	als ation require : : f assessmen aper, writte	ments: t: en examinatio	n, pro	ject v					nd	

9	Importance of the grade for the final grade:					
	according to BRPO					
10	Module coordinator:					
	Prof. DrIng. Jörg Nottmeyer					
11	Other information:					
12	Language:					
	German					

Elec	Elective Module: Digital Logistics									WM	WM		
	Identification Workload: number:		Credits: Stud			y sem	ester:	Frequency of the offer		Duration:			
9024		150 h		5	5th sem	or	6th	each semester		1 semester			
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study				
	Lecture		60) students			SCH		h		h		
	Tuition i	n seminars	30) students			SCH		h		h		
	Exercise	!	20) students			SCH		h		h		
	Practical or seminar Supervised self-study		15 students			0	SCH	0	h	0	h		
			60 students				SCH		h		h		
2	Learning	g outcomes/	com	petences:			•	•	•		•		
3	Contents	S:											
4	Forms o	f teaching:											
5	Participation requirements:												
	Formal:												
	Content:												
6	Forms of assessment:												
7	Prerequisite for the award of credit points:												
8	Applicat	ion of the m	odu	le (in the fol	lowing	study	/ progr	ammes)					
				k-integrated									
9	Importa	nce of the g	rade	e for the fina	ıl grad	e:							
10		coordinator:											
			Pas	scal Reusch									
11	Other in	formation:											
12	Languag	je:											
	Germar	1											

Web Technologies										WEB	
Iden num	tification ber:	Workload:		Credits:	Study semester:		Freque offer	ncy of the	Duration:		
320	7	150		5	4th Semester		annually in the summer semester		1 semester		
1	Course:	Course: P		anned group	sizes Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60) students		2	SCH	0	h	64	h
	Tuition i	Tuition in seminars 30) students		0	SCH	0	h	0	h
	Exercise 20		20	20 students		1	SCH	8	h	46	h
	Practical or 1 seminar		15	15 students		1	SCH	16	h	0	h
	Supervised self- study) students		1	SCH	16	h	0	h

2 Learning outcomes/competences:

Students:

- implement simple websites with the help of appropriate tools;
- apply markup languages and common data exchange formats for web programming and data exchange;
- link databases to web interfaces;
- explain the basic concepts of the semantic web and place it in the canon of web technologies;
- explain the various technical, logical and legal influencing factors that play a role in e-business;
- discuss current and upcoming developments in the various areas and evaluate the effects on existing or planned E-business systems in the overall operational framework;
- explain the structure and the administration of E-business tools and of comprehensive platform solutions.

3 Contents:

Internet technologies and architectures:

- Foundations of web programming
- Markup languages (e.g. XML) and data exchange formats (e.g. JSON)
- Integration of databases with web interfaces
- Fundamental concepts of the Semantic Web

E-business standards (data formats and rules for the exchange of information):

- Identification standards e.g. GTIN (Global Trade Item Number)
- Classification standards e.g. eCl@ss
- Catalogue exchange formats e.g. BMEcat
- Transaction standards e.g. EDIFACT, EDIFOR
- Process standards e.g. ECR (efficient consumer response)

Platform solutions:

- Cross-Channel Commerce Management Solutions
- E-commerce logistics fulfilment networks that enable national and international storage, handling and delivery of products (via an interface to online shop or ERP systems)

4 Forms of teaching:

Learning units for self-study, classroom events in the form of exercises and practicals

5	Participation requirements:							
	Formal:	-						
	Content:	Good programming skills						
		 Good knowledge of database technologies 						
6	Forms of assessment:							
	Term paper, written examination, project work or oral examination							
7	Prerequisite for the award of credit points:							
	module examination pass and course assessment							
8	Application of the module (in the following study programmes)							
	Digital Logistics (work-integrated) B.Eng. and Digital Technologies (work-							
	integrated) B.Eng.							
9	Importance of the grade for the final grade:							
	according to BRPO							
10	Module coordi	nator:						
	N. N.							
11	1 Other information:							
	-							
12	Language:							
	German							